Collaborative Testing Services, Inc.

Containerboard Interlaboratory Testing Program

Participant Summary Report #560 (E) - May 2016

Revision Notice:

CTS discovered that some flags on the Monthly Results CPV and SD Wks were incorrectly assigned for this cycle. The statistical calculations are correct, only the flag was displayed in error. CTS notified all affected laboratories. If you have any questions, please do not hesitate to contact Kyle Kruger at containerboard@cts-interlab.com or (571) 434-1925 (ext. 115)

Introduction to the Containerboard Program

Explanation of Tables and Definitions of Terms

Analysis	Sample	Analysis Name
201	BX10	Box Compression Strength, Corrugated Boxes
202	ECT9	Edgewise Compressive Strength, Wax (T811), Corrugated board
203	ECT9	Edgewise Compressive Strength by Clamp (T839), Corrugated board
205	42D1	Mullen Burst of Linerboard, 42 lb Linerboard
206	69C2	Mullen Burst of Linerboard, 69 lb Linerboard
215	42D1	Ring Crush of Linerboard, Rigid Platen Type, 42 lb Linerboard
216	69C2	Ring Crush of Linerboard, Rigid Platen Type, 69 lb Linerboard
223	42D1	STFI of Linerboard, 42 lb Linerboard
224	69C2	STFI of Linerboard, 69 lb Linerboard
228	69C	Roughness - Stylus Method, 69 lb Linerboard
229	42D2	Roughness - Sheffield Method, 42 lb Linerboard
231	36Z	Internal Bond Strength, Linerboard, 36 lb Linerboard
234	36Z	Coefficient of Static Friction - Inclined Plane, 36 lb Linerboard
237	36Z	Air Resistance - Gurley Method, Linerboard, 36 lb Linerboard
240	CM81	Flat Crush Strength (CMT) of Medium, 26 lb Corrugating Medium
250	CM81	Fluted Crush of Medium, 26 lb Corrugating Medium
255	CM81	Ring Crush of Medium, 26 lb Corrugating Medium
261	CM81	STFI of Medium, 26 lb Corrugating Medium

Collaborative Testing Services, Inc.
CONTAINERBOARD INTERLABORATORY TESTING PROGRAM

INTRODUCTION

The Interlaboratory Testing Program for Containerboard is operated and maintained by Collaborative Testing Services, Inc. (CTS), with technical guidance provided by the Containerboard Group of the American Forest & Paper Association. The tests are conducted on a monthly basis.

For these tests samples of linerboard and corrugating medium, that each have been separately randomized from narrow rolls, are distributed for testing weekly. One weight of medium (26 lb.) is used for Concora Flat Crush Strength, Corrugated Fluted Crush Strength, Ring Crush Strength, and STFI Compression. Two weights of linerboard are tested each month for Mullen Burst, Ring Crush, and STFI Compression: 42 lb. - every month; 36 lb. and 56 lb. - alternate months. The participants return their test results for analysis and receive a monthly report.

Please refer to the section, "EXPLANATION OF TABLES", for definitions of terms and guidelines to interpreting the results.

USE OF AVERAGE MEAN AS A COLLABORATIVE REFERENCE VALUE

The samples of linerboard and corrugating medium, which have been randomized and placed in sealed packages for distribution in this program, may be used as collaborative reference materials. The values most representative of each material are the Cumulative Grand Means in the latest reports, given at the bottom right of each table. Comparisons can only be made within one lot of material; therefore check your measurements against the Cumulative Grand Means with the same lot code as on the packages being tested.

Material	Lot Code	Dates in Use
26 lb Corrugating Medium	CM81	October 2015-Current
	CM73	December 2013-September 2015
36 lb Linerboard	36Z3	December 2014-Current
	36Z2	February 2012-October 2014
42 lb Linerboard	42D1	April 2015-Current
	42B4	May 2014-March 2015
69 lb Linerboard	69C2	March 2015-Current
	69C1	January 2014-January 2015

ABOUT CTS

Founded in 1971, Collaborative Testing Services, Inc. (CTS) is a privately-owned company that specializes in interlaboratory tests for a wide variety of industries, including rubber, plastics, fasteners and metals, containerboard, paper, color, and wine, as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality control objectives. Labs from the U.S., as well as more than 80 countries, currently participate in the CTS programs.

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EXPLANATION OF TABLES

Each analysis is divided into three time spans. On the left side of the table are the individual laboratory results for each week of the month; in the center are each lab's statistical data for the month; and on the right are each lab's cumulative data for up to 16 weeks. At the bottom of the table are the consensus statistics for all the participants for each of the three time spans.

Definitions of Terms Used

Weekly Results

Laboratory Data

WebCode	- A six character laboratory identifier used to maintain information on a confidential basis. The WebCode is unique for each cycle and will change for each report. Your WebCode can be found in your Individual Report (Current Month Performance Report) and your datasheet.
Weekly Means	- The average of the test results obtained by the participant for each week that data were reported.

Consensus Data

Wk Mean	- For each week, the average of the Means for all the participants, excluding those laboratories flagged with an 'X'.
Avg SDr	- For each week, the average of the within-laboratory standard deviations (SDr's) for all the participants, excluding those laboratories flagged with an 'X'. The Avg SDr is an indication of the variation of measurements within an average laboratory.
SD btwn Labs	- For each week, the standard deviation of the laboratory Means about the Wk Mean, excluding those laboratories flagged with an 'X'. The SD LABS is an indication of the precision of measurement between the laboratories.
Labs Incld	- The number of laboratory Means included in the Wk Mean for that week.
Labs Excld	- The number of laboratory Means reported but excluded from the Wk Mean for that week because of outlying results ('X' following Mean).
Labs not rcvd	- The number of laboratories failing to report for that week.

Monthly Results

Laboratory Data

Mean	- For each laboratory, the average of all the weekly Means reported for this month.
CPV	- Comparative Performance Value, an indication of how well a laboratory's Mean agrees with the other participants. The CPV is a ratio indicating the number of standard deviations from the consensus mean (Monthly Mean). The closer a laboratory's CPV is to zero, the more consistent its results are with the other participants' data.
SDr	- For each laboratory, the average of the weekly within-lab standard deviations (SDr's) for all reported Weekly Means this month.
SD Wk	- The standard deviation among the laboratory's weekly Means, including those Means flagged with an 'X'. The SD Wks is an indication of that laboratory's ability to obtain constant results from week to week.

Consensus Data

Month Mean	- The average of the Means for all the participants, excluding those laboratories flagged with an 'X,' reporting data for this month.
Avg SDr	- For the current month, the average of the within-laboratory standard deviations (SDr's) for all the participants, excluding those laboratories flagged with an 'X'.
SD btwn Labs	- For the current month, the standard deviation of the laboratory Means about the Month Mean, excluding those laboratories flagged with an 'X'.
SD btwn Group	- For the current month, the standard deviation of the laboratory Means within the group about the Month Mean, excluding those laboratories flagged with an 'X'.
SD btwn Wks	- For the current month, the average of the laboratory between week standard deviations (SD Wks') for all the participants.

Cumulative Results

Laboratory Data

Mean	- For each lab, the average of all the monthly Means reported for the weeks shown.
CPV	- Comparative Performance Value, an indication of how well a laboratory's cumulative mean agrees with the other participants. The CPV is a ratio indicating the number of standard deviations from the consensus mean (Monthly Mean).
SDr	- For each laboratory, the average of the weekly within-lab standard deviations (SDr's) for the weeks shown.
SD Wk	- The standard deviation among the laboratory's weekly Means for the weeks shown, including those Means flagged with an 'X'. The SD Wks is an indication of that laboratory's ability to obtain constant results from week to week.
Wks	- The number of weeks included in the cumulative period.
Inst	- The two letter instrument code. Codes are summarized at the bottom of the last analysis page.

Consensus Data

Grand Mean	- The average of the Means for all the participants, excluding those laboratories flagged with an 'X,' reporting data for the number of weeks included in the cumulative period.
Avg SDr	- For the cumulative period, the average of the within-laboratory standard deviations (SDr's) for all the participants, excluding those laboratories flagged with an 'X'.
SD btwn Labs	- For the cumulative period, the standard deviation of the laboratory Means about the Month Mean, excluding those laboratories flagged with an 'X'.
SD btwn Wks	- For the cumulative period, the average of the laboratory between week standard deviations for all the participants.

Any laboratory that receives a 'flag' following a mean or standard deviation should refer to the chart below for an explanation of the data flag symbol:

Flag	Explanation

Data Flags " X " and " * " indicate a laboratory's performance on an average value differed from the consensus.
Data Flags " H " and " L " indicate a laboratory's performance on a standard deviation differed from the consensus.

Flags assigned to Weekly Means, Monthly Mean and Cumulative Mean:

X	Excluded from the weekly means, monthly means and/or the cumulative mean. Immediate review of data and/or testing procedure is recommended.
*	Included in the weekly means, monthly means and/or the cumulative mean; however, lab should review testing procedure and monitor future results.

Flags assigned to Weekly Means:

H	Indicates high within-laboratory standard deviation. The laboratory SDr for each week is not shown, but laboratory average SDr and consensus average SDr values are shown.
L	Indicates low within-laboratory standard deviation. The laboratory SDr for each week is not shown, but laboratory monthly average SDr and consensus average SDr values are shown.

Flags assigned to Monthly SD Wks and Cumulative SD Wks:

H	Indicates high variabilty between weekly means (high week-to-week variation).
L	Indicates low variabilty between weekly means (low week-to-week variation).

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
2T2MZU	642.6	-0.85	16.3	712.8	-0.08	50.4	4	LL
4NZT4H	676.2	-0.23	83.4	649.0	-1.44	57.3	4	ER
6LNDAG	699.1	0.19	58.8	689.9	-0.57	51.8	4	ER
737WH8	698.2	0.18	75.5	713.6	-0.06	59.2	4	LM
A7F9NY	747.0	1.07	28.4	759.9	0.93	28.1	2	LS
AAZZY2	647.2	-0.76	34.3	642.5	-1.58	48.4	4	LS
BUYN43	670.4	-0.34	18.8	700.0	-0.35	55.7	4	EX
CW4TUW	716.7	0.52	49.9	718.5	0.04	33.8	3	LH
CZ44QW	739.6	0.94	26.8	778.5	1.33	37.8	4	LG
D2BD8E	684.9	-0.07	34.2	720.5	0.08	53.5	4	ET
EQN486	714.6	0.48	40.1	671.1	-0.97	58.1	4	LL
FJ4VAF	798.8	2.03 *	17.4	777.5	1.31	41.6	4	TE
GL3YMZ	771.0	1.52	12.1	783.4	1.43	13.3	4	ER
K4EMPQ	550.2	-2.55 *	76.4	785.9	1.48	65.2	4	EX
KMLJX9	640.8	-0.88	24.8	655.5	-1.30	34.0	4	LS
L248T4	671.0	-0.32	55.2	681.2	-0.76	57.5	4	LM
LZ8NR3	708.6	0.37	45.2	684.6	-0.68	57.3	4	LG
PA6QKP	740.0	0.94	29.2	782.0	1.40	33.9	3	LH
PKQURP	636.4	-0.96	56.9	708.3	-0.17	36.8	4	ER
RRGELF	632.0	-1.04	314.2	765.6	1.05	163.8	4	TB
UBN4CH	670.7	-0.33	50.8	687.5	-0.62	46.3	3	EX
XF38AM	694.2	0.10	71.2	695.1	-0.46	56.6	4	ES

Consensus (All Labs) Results

Month Mean	688.65	Grand Mean	716.49
Avg SDr	81.79	Avg SDr	58.63
SD btwn Labs	54.34	SD btwn Labs	46.75
Labs Incld	22	Labs Incld	22

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Hot melt adhesive sealing	706.48	43.94	17.83	4
Clip sealing	689.56	38.20	0.91	15
Tape sealing	660.34	126.70	28.31	3

Key to Instrument Codes Reported by Participants

ER	Emerson 6200 Series	ES	Emerson 8510
ET	Emerson 7200	EX	Emerson Apparatus (Model not specified)
LG	TLS / L.A.B. Validator Series	LH	L.A.B. Compression Tester Model #10610
LL	Lansmont 76-5K	LM	Lansmont 122-15k
LS	Lansmont Squeezer	TB	TMI Monitor/Compression Tester, Model 17-70
TE	Testometric M500 - 25 KN		

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
A7F9NY	39.4	-0.12	1.9	40.8	0.09	2.0	2	EM
AAZZY2	42.9	0.62	1.5	43.2	0.70	1.4	4	LC
G3UWPV	37.1	-0.62	1.5	38.3	-0.54	1.3	4	WK
KMLJX9	38.7	-0.27	2.1	39.7	-0.17	2.1	4	EM
LZ8NR3	46.9	1.50	2.7	45.5	1.29	1.8	4	LZ
PA6QKP	40.3	0.07	1.4	41.1	0.17	1.2	2	TC
PEFCJ3	31.4	-1.85	1.7	32.3	-2.05 *	1.8	3	XX
TDWQ24	43.1	0.67	1.5	42.4	0.51	1.8	3	XX

Consensus (All Labs) Results

Month Mean	39.99	Grand Mean	40.41
Avg SDr	1.82	Avg SDr	1.72
SD btwn Labs	4.64	SD btwn Labs	3.94
Labs Incld	8	Labs Incld	8

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	LC	L&W Crush Tester 48
LZ	L&W Crush Tester (model not specified)	TC	TMI Monitor/Compression Tester, Model 17-37
WK	Zwick Z005 Crush Tester	XX	Instrument make/model not specified by lab

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
2MTR6D	46.9	0.97	1.6	46.9	0.83	1.4	3	LC
2T2MZU	42.9	-0.83	1.6	46.9	0.80	1.4	4	BU
3VFCMG	45.9	0.52	1.9	46.3	0.41	1.3	3	TM
4NZT4H	44.9	0.08	2.4	47.0	0.92	2.0	4	LD
69YG9H	45.4	0.29	1.9	46.0	0.22	1.5	4	LD
6LNDAG	43.4	-0.59	2.7	44.0	-1.20	2.5	4	EN
6Z7T4M	46.5	0.78	1.5	47.5	1.21	1.4	4	EM
737WH8	46.6	0.81	1.1	47.8	1.44	1.2	4	TG
742EJA	44.1	-0.28	2.0	45.5	-0.13	2.1	4	TK
8D3R4P	47.6	1.26	1.7	47.3	1.12	1.5	4	LD
9HWGB2	47.4	1.18	1.2	49.4	2.56 *	1.4	4	LC
A7F9NY	44.2	-0.24	2.3	44.8	-0.63	1.8	2	EM
AAZZY2	47.0	1.02	1.6	46.4	0.45	1.4	4	LC
AUK3RF	44.7	-0.03	2.5	44.6	-0.77	2.2	3	LD
BUYN43	45.0	0.14	1.3	45.5	-0.19	1.2	4	XX
CW4TUW	44.8	0.05	1.9	46.2	0.36	2.3	3	EM
CZ44QW	42.3	-1.07	3.0	45.1	-0.42	2.7	4	EM
CZKT2J	42.5	-1.00	1.4	44.2	-1.10	1.2	4	TB
D2BD8E	52.7	3.54 X	1.3	51.2	3.82 X	1.8	4	TD
EM9CHX	45.9	0.52	0.8	45.1	-0.45	1.9	4	LD
EQN486	42.5	-1.02	1.9	47.3	1.11	2.1	4	LC
GGRNV7	45.0	0.14	1.5	44.0	-1.20	1.6	4	LC
GL3YMZ	41.6	-1.38	1.0	42.3	-2.37 *	1.0	4	EM
GRDKMD	47.5	1.21	0.7	46.0	0.16	0.7	4	LC
J8JVGV	40.6	-1.86	0.9	38.5	-5.03 X	1.4	4	TD
JTYFDW	42.3	-1.08	2.9	43.3	-1.71	2.9	4	LC
K4EMPQ	46.3	0.69	1.1	46.3	0.43	2.2	4	CT
KMLJX9	45.3	0.24	2.3	44.7	-0.72	1.8	4	EM
L248T4	48.2	1.53	1.5	46.5	0.55	1.7	4	EM
LMLCFT	43.0	-0.77	0.8	44.8	-0.68	1.3	4	TG
LZ8NR3	46.0	0.57	1.9	45.3	-0.30	1.9	4	LZ
MTMB4N	43.2	-0.68	2.0	43.9	-1.28	1.5	4	EX
PA6QKP	43.7	-0.44	0.9	44.7	-0.69	0.9	2	TC
PEFCJ3	31.1	-6.09 X	1.3	32.3	-9.39 X	1.7	3	XX
PKQURP	44.5	-0.11	1.4	44.5	-0.83	1.5	4	TB
RRGELF	39.2	-2.48 *	1.0	46.9	0.83	0.8	4	LD
UBN4CH	48.1	1.51	0.4	47.2	1.00	0.8	3	TL
XF38AM	44.8	0.01	1.4	46.6	0.60	1.6	4	LD
XGYNMK	48.6	1.72	2.7	45.1	-0.47	1.9	4	LC

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
ZGNVKD	41.7	-1.37	2.4	45.9	0.15	2.2	4	LC

Consensus (All Labs) Results

Month Mean	44.73	Grand Mean	45.73
Avg SDr	1.78	Avg SDr	1.72
SD btwn Labs	2.24	SD btwn Labs	1.43
Labs Incld	38	Labs Incld	37

Key to Instrument Codes Reported by Participants

BU	Buchel Digital Crush Tester	CT	Con-Ten
EM	Emerson 1200 Series	EN	Emerson 2200
EX	Emerson (model not specified)	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LZ	L&W Crush Tester (model not specified)
TB	TMI Monitor/Compression Tester, Model 17-70	TC	TMI Monitor/Compression Tester, Model 17-37
TD	TMI Digital Crush Tester, Model 17-09	TG	TMI Digital Crush Tester, 17-76
TK	TLS Compression Tester, Model 5184	TL	Tech-Lab Systems Compression
TM	TMI/Hinde & Dausch	XX	Instrument make/model not specified by lab

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2LX93C	111.3	110.1	107.1	110.2	109.7	0.19	9.4	1.8	111.4	0.68	9.0	2.7	16	LC
2WVAFG	109.5	110.1	108.6	109.5	109.4	0.12	13.0	0.6 L	108.9	-0.16	11.7	3.0	16	LA
38WW8D	100.1	109.5	108.6	106.4	106.2	-0.84	10.9	4.2	107.9	-0.49	10.5	2.8	16	LC
4MJWBH	114.5	109.8	108.1	113.7	111.5	0.73	12.1	3.1	111.8	0.83	12.5	2.5	15	TB
4NZT4H	104.8	104.9	101.2 L	108.9	105.0	-1.19	8.1	3.1	108.6	-0.26	10.4	3.8	16	AH
4Q4NMK	108.0	100.5	109.2	106.5	106.1	-0.87	11.0	3.9	107.8	-0.52	10.8	3.6	16	LA
7Y7KL9	98.8 *	107.8 L	111.9	105.1 L	105.9	-0.91	5.9	5.5	111.0	0.54	5.3	6.0	16	LA
8D3R4P	115.2	110.3	115.6	113.2	113.6	1.33	8.4	2.4	113.7	1.46	8.7	3.4	12	LA
9UQWYG	106.6	103.7 L	108.2	113.2	107.9	-0.33	9.6	4.0	107.5	-0.63	10.9	3.4	16	LZ
AAZZY2	101.6	105.6	106.6	102.9	104.2	-1.42	11.7	2.3	105.1	-1.43	10.3	3.1	16	AH
AUK3RF	103.3	102.8	105.1	102.4	103.4	-1.64	9.6	1.2	105.4	-1.33	9.6	2.0	16	LA
B7WNG8	107.2	109.0	114.1	110.2	110.1	0.33	11.9	2.9	109.6	0.07	12.3	2.9	16	LA
BJG4K7	113.1	106.5	109.2	110.7	109.9	0.26	12.0	2.8	111.2	0.61	12.2	2.4	16	LZ
BP6REC	109.8	112.9	110.7	107.8	110.3	0.38	10.1	2.1	109.5	0.02	9.8	2.2	14	LC
BUYN43	110.0	107.5	105.0	106.4	107.2	-0.53	10.9	2.1	111.0	0.55	10.8	5.4	15	AH
CAQ677	109.2	110.6	109.0	114.8	110.9	0.55	12.7	2.7	112.8	1.15	11.9	2.4	12	LA
CZYMRX	110.1	111.8	107.9	111.2	110.3	0.36	10.4	1.7	109.4	0.00	9.8	2.1	16	TP
EM9CHX	113.0	110.1	112.9	109.7	111.4	0.70	10.0	1.8	111.9	0.84	9.9	3.1	16	AA
EQ8NEX	109.7	101.3	105.8	106.7	105.9	-0.92	7.5	3.5	113.2	1.30	11.7	5.6	16	LC
FBQCY9	113.1	112.2	119.9 *	115.1	115.1	1.77	13.6	3.4	115.0	1.87	12.0	2.7	16	LA
FEQMV9	108.8	103.7	105.7	105.4	105.9	-0.91	11.4	2.1	108.4	-0.34	12.2	5.0	16	TB
GFFCTU	113.9	111.4	106.0	109.2	110.1	0.32	12.9	3.3	107.2	-0.72	13.4	4.5	16	XX
GGRNV7	117.6	114.5	119.3 *	116.4	116.9	2.31 *	11.5	2.0	112.7	1.13	11.9	3.2	16	LC
GGV9KU	113.5 L	113.0	113.4 L	112.3	113.1	1.18	5.0	0.5 L	113.1	1.26	4.9	1.5	16	XX
H8ZR9V	106.8	103.0	110.6	110.3	107.7	-0.40	7.0	3.6	107.6	-0.59	10.8	7.4 H	16	LJ
H9V9LR	109.1	102.7	No Data	101.2 *	104.3	-1.37	13.3	4.2	107.8	-0.55	10.2	6.9 H	12	LC
J7NDEU	109.3	109.4	109.3	109.3	109.3	0.09	10.7	0.0 L	109.4	0.02	7.7	0.2 L	16	LJ
K4EMPQ	106.4	104.2	95.6 *	107.8	103.5	-1.62	13.0	5.5	112.3	1.00	14.3	6.4	16	XX
KMLJX9	112.0	110.2	109.5	111.4	110.8	0.51	11.6	1.1	105.5	-1.30	10.0	6.7	16	RE
L248T4	101.7	101.1	101.5	106.2	102.6	-1.87	11.6	2.4	104.5	-1.65	9.8	2.6	16	AH
LBTTY3	111.5	108.7	112.4	113.3	111.5	0.72	11.1	2.0	107.6	-0.62	11.8	4.5	16	LA
LZ8NR3	116.8	117.2	105.9	105.0	111.2	0.64	13.2	6.7	113.4	1.35	12.3	4.2	16	LZ
M2XAXY	107.2	109.7	117.7	113.4	112.0	0.87	10.5	4.5	109.0	-0.13	7.6	3.1	16	LA
M3TTYZ	101.2	113.5	113.8	113.5	110.5	0.43	11.0	6.2	106.6	-0.95	10.7	7.2 H	12	LC
MEQV4U	97.8 *	106.8	No Data	No Data	102.3	-1.97	9.9	6.4	102.3	-2.40 *	10.3	12.7 H	10	LA

Containerboard Interlaboratory Testing Program

Analysis 205

Bursting Strength (Mullen), 42 lb Linerboard - 42D1

TAPPI Official Test Method T807

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
MUHQDZ	113.0	108.2	107.0	109.8	109.5	0.14	10.3	2.6	107.7	-0.57	10.6	3.0	16	AH
PA6QKP	115.3	115.3	111.8	113.3	113.9	1.42	12.7	1.7	113.7	1.44	12.8	1.7	12	AA
PKQURP	108.1	109.8	107.3	107.8	108.2	-0.23	13.1	1.1	106.1	-1.12	11.2	2.4	16	LA
QR2FDX	105.0	102.5	108.5	109.7	106.4	-0.76	7.5	3.3	105.3	-1.39	7.8	2.7	16	TB
RCLWWH	109.5	110.9	108.4	109.8	109.7	0.18	8.3	1.0	109.5	0.03	8.6	2.2	16	AH
TYRZ9N	108.6	111.4	110.6	115.6	111.5	0.73	10.3	2.9	112.4	1.02	11.0	3.4	16	LC
UDTV4V	113.3	116.0	108.9	110.1	112.1	0.89	14.1	3.2	109.4	-0.01	12.7	3.0	16	AX
UKQNCP	111.0	105.8	115.8	114.2	111.7	0.78	12.0	4.4	110.0	0.21	11.9	3.2	16	AH
UQGXMN	111.8 L	105.4 L	101.5	108.2	106.7	-0.68	5.5	4.3	110.4	0.35	7.7	4.8	16	LA
VPZ2UN	109.5	105.4	101.8	105.5	105.6	-1.02	8.8	3.2	105.7	-1.25	10.1	2.0	16	LA
VZX28T	106.9	107.0	113.0	109.5	109.1	0.01	10.9	2.9	108.5	-0.30	10.5	2.1	16	LB
WC628X	105.8	111.0	109.4	106.2	108.1	-0.27	5.7	2.5	108.2	-0.39	5.5	2.8	16	RE
WNYNLL	107.1	111.0	103.5	106.3	107.0	-0.60	9.8	3.1	105.9	-1.19	10.9	3.1	16	LC
WZR82R	113.9	117.2	115.0	114.7	115.2	1.80	9.0	1.4	114.2	1.62	9.1	2.6	16	LC
X3DBBA	109.2	102.5	98.9 *	110.0	105.1	-1.14	8.5	5.3	104.5	-1.65	8.1	4.3	14	AX
XF38AM	110.4	114.8	112.6	107.5	111.3	0.67	10.4	3.1	111.2	0.62	10.5	2.6	16	LA
XGYNMK	116.1	106.1	111.5	111.5	111.3	0.66	9.1	4.1	111.1	0.59	10.4	3.8	16	LA
Y39DDJ	118.0	117.9 *	113.1	102.5	112.9	1.12	10.0	7.3 H	111.7	0.77	9.8	7.6 H	16	LC

Consensus (All Labs) Results

Wk Mean	109.30	108.76	109.03	109.37	Month Mean	109.02	Grand Mean	109.39
Avg SDr	10.44	10.11	10.85	10.81	Avg SDr	10.56	Avg SDr	10.47
SD btwn Labs	4.73	4.49	4.98	3.66	SD btwn Labs	3.42	SD btwn Labs	2.97
Labs Incld	52	52	50	51	SD btwn Wks	3.49	SD btwn Wks	4.26
Labs Excld	0	0	0	0	Labs Incld	52	Labs Incld	52
Labs not Rcvd	0	0	2	1				

Key to Instrument Codes Reported by Participants

AA	Perkins Model A	AH	Perkins Model AH
AX	Perkins Mullen Tester (model not specified)	LA	L&W Bursting Strength Tester
LB	L&W Burst-O-Matic	LC	L&W Autoline
LJ	L&W Bursting Strength Tester J-Type	LZ	L&W (model not specified)
RE	Regmed/Mullen Tester	TB	TMI Monitor/Burst 1000
TP	Technidyne PROFILE/Plus	XX	Instrument make/model not specified by lab

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2LX93C	161.2	150.8	149.6	157.0	154.6	-0.29	12.2	5.5	156.6	0.26	10.9	4.3	12	LC
2WVAFG	159.0	157.8	153.9	152.6	155.8	0.02	11.8	3.1	156.6	0.26	11.1	3.1	12	LA
38WW8D	154.4	159.6	152.7	150.6	154.3	-0.38	11.7	3.8	153.6	-0.59	11.9	3.6	12	LC
4MJWBH	158.3	160.6	155.4 H	165.2	159.9	1.09	14.8	4.1	157.3	0.45	12.5	5.0	11	TB
4NZT4H	146.3	153.3	152.7	151.0	150.8	-1.30	10.8	3.2	156.0	0.09	10.4	9.4 H	12	AH
4Q4NMK	150.0	154.9	151.8	151.4	152.0	-0.99	10.2	2.1	153.2	-0.71	10.9	3.8	12	LA
7Y7KL9	167.6 *	162.8	162.1	159.5	163.0	1.92	6.9	3.4	162.8	2.02 *	8.4	3.3	8	LA
8D3R4P	153.1	155.9	152.5	157.2	154.7	-0.29	12.0	2.2	152.8	-0.82	11.2	2.7	8	LA
9UQWYG	146.7	148.9	155.2	156.5	151.8	-1.04	11.1	4.8	148.4	-2.07 *	12.1	4.0	11	LZ
AAZZY2	149.6	140.5 X	155.7	150.3	149.0	-1.78	11.6	6.3	151.8	-1.12	11.5	5.3	12	AH
AUK3RF	154.2	156.1 L	155.6	156.3	155.6	-0.05	7.7	1.0	153.5	-0.61	7.5	2.5	12	LA
B7WNG8	158.1	155.7	159.1	149.8	155.7	-0.02	13.6	4.2	155.6	-0.04	11.9	2.8	12	LA
BJG4K7	157.8	153.1	150.8	158.5	155.0	-0.19	11.7	3.7	156.9	0.34	11.8	3.1	12	LZ
BP6REC	154.0	150.8	154.6	153.8	153.3	-0.65	11.0	1.7	153.0	-0.76	11.7	3.8	12	LC
BUYN43	164.0	152.5	153.5	156.9	156.7	0.26	8.1	5.2	171.8	4.56 X	137.0	40.7 H	9	AH
CAQ677	150.6	150.0	149.8	153.2	150.9	-1.28	12.1	1.6	152.1	-1.02	11.7	2.7	11	LA
CZYMRX	153.1	149.2	154.7	153.8	152.7	-0.81	10.7	2.4	152.2	-1.01	8.9	4.2	12	TP
EM9CHX	163.5	163.6	157.0	153.7	159.5	0.98	9.9	4.9	158.3	0.74	10.5	5.5	12	AA
EQ8NEX	159.2	163.4	162.6	162.5	161.9	1.63	10.4	1.9	160.5	1.36	12.4	4.5	12	LC
FBQCY9	170.7 *	166.2	166.2 *	167.0 *	167.5	3.12 X	10.9	2.1	165.3	2.71 *	11.8	3.7	12	LA
FEQMV9	152.2	144.0 *	159.2	154.2	152.4	-0.89	13.2	6.3	153.5	-0.63	11.9	4.1	11	TB
GFFCTU	153.1	158.0	160.3	159.7	157.8	0.53	9.4	3.3	156.4	0.20	10.2	3.4	8	XX
GGRNV7	159.4	152.4	158.9 H	161.8	158.1	0.63	14.4	4.0	155.4	-0.09	12.6	3.9	12	LC
GGV9KU	152.6	154.4	154.0 L	157.8 L	154.7	-0.28	5.3	2.2	155.2	-0.14	7.3	5.0	12	AX
H8ZR9V	159.1	149.4	157.2	156.9 L	155.7	-0.03	5.6	4.3	155.9	0.04	10.4	5.2	12	LJ
H9V9LR	143.6 *	152.5	No Data	153.2	149.8	-1.58	11.1	5.3	150.6	-1.44	10.6	4.2	8	LC
J7NDEU	155.4	155.2	155.5	155.4	155.4	-0.11	10.5	0.1 L	155.4	-0.09	9.4	0.1 L	12	LJ
K4EMPQ	153.8	152.0	153.9	152.7	153.1	-0.70	12.2	0.9	157.7	0.57	12.9	4.9	11	XX
KMLJX9	161.6	159.9	155.4	161.9	159.7	1.04	12.3	3.0	145.0	-3.04 X	11.3	11.6 H	12	RE
L248T4	150.5	153.7	147.6	147.7	149.9	-1.56	7.8	2.9	153.0	-0.77	9.8	3.9	12	AH
LBTTY3	153.2	160.7	160.7	159.9	158.6	0.76	12.1	3.6	156.5	0.23	12.1	5.6	12	LA
LZ8NR3	157.4	158.7	152.6	157.8	156.6	0.22	10.4	2.7	157.8	0.60	11.2	3.4	12	LZ
M2XAXY	156.0	160.8	163.5	160.6	160.2	1.18	8.9	3.1	158.2	0.70	10.6	3.3	12	LA
M3TTYZ	159.4	154.9	167.0 *	150.3	157.9	0.57	12.3	7.1	154.5	-0.34	13.5	6.9 H	8	LC
MEQV4U	133.0 X	151.5	No Data	No Data	142.3	-3.57 X	12.2	13.0 H	146.7	-2.54 *	12.6	7.6 H	6	LA

Containerboard Interlaboratory Testing Program

Analysis 206

Bursting Strength (Mullen), 69 lb Linerboard - 69C2

TAPPI Official Test Method T807

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
MUHQDZ	157.5	158.8	150.8	152.6	154.9	-0.22	11.1	3.8	153.0	-0.78	11.6	4.1	12	AH
PA6QKP	159.3	157.3	154.3	161.3	158.0	0.59	12.3	3.0	159.7	1.12	12.9	2.7	8	AA
PKQURP	150.2	165.8	155.6	156.3	157.0	0.33	10.0	6.5	158.2	0.70	10.8	4.0	12	LA
QR2FDX	155.9	148.4	163.9	159.8	157.0	0.33	12.9	6.6	158.5	0.79	12.0	5.0	12	TB
RCLWWH	154.2	153.6	154.9	150.1	153.2	-0.68	9.4	2.1	152.7	-0.84	8.5	2.0	12	AH
TYRZ9N	162.0	160.8	158.4 L	160.8	160.5	1.26	10.0	1.5	158.2	0.70	12.0	3.8	12	XX
UDTV4V	153.3	160.8	154.7	152.5	155.3	-0.11	13.0	3.7	156.1	0.11	11.6	2.9	8	AX
UKQNCP	155.0	154.4	158.0	156.1	155.9	0.03	10.5	1.6	152.9	-0.79	11.1	3.3	12	AH
UQGXMN	160.6	162.9	173.4 X	161.4	164.5	2.33 *	8.4	6.0	163.3	2.15 *	8.3	5.3	12	LA
VPZ2UN	145.1	155.8	155.8	152.8	152.4	-0.90	12.1	5.1	152.9	-0.81	11.2	3.7	12	LA
VZX28T	159.4	155.5	153.6	156.0	156.1	0.10	8.9	2.4	157.7	0.56	9.5	4.2	12	LB
WC628X	156.6	163.0	150.2	156.6	156.6	0.22	12.1	5.2	155.7	0.00	10.4	2.9	12	RE
WNYNLL	155.2	150.5	160.2	153.5	154.9	-0.24	11.5	4.1	155.1	-0.16	11.8	3.7	12	LC
WZR82R	157.7	156.5	156.9	154.1	156.3	0.15	13.4	1.5	157.0	0.36	12.3	2.5	12	LC
X3DBBA	140.3 *	136.9 X	154.2	152.6	146.0	-2.59 *	8.7	8.7 H	143.5	-3.47 X	10.0	6.0	12	AX
XF38AM	163.9	164.0	159.7	163.9	162.9	1.88	11.1	2.1	160.1	1.24	10.7	4.3	12	LA
XGYNMK	159.9	158.9	157.8	159.5	159.0	0.86	11.2	0.9	157.9	0.62	10.4	2.4	12	LA
Y39DDJ	158.0	157.3	154.6	165.0	158.7	0.78	10.2	4.4	153.9	-0.53	10.4	5.2	12	LC

Consensus (All Labs) Results

Wk Mean	155.87	156.14	156.00	156.31	Month Mean	155.75	Grand Mean	155.72
Avg SDr	10.77	11.38	11.17	10.51	Avg SDr	10.96	Avg SDr	11.06
SD btwn Labs	5.85	5.04	4.24	4.52	SD btwn Labs	3.78	SD btwn Labs	3.53
Labs Incld	51	50	49	51	SD btwn Wks	4.03	SD btwn Wks	4.24
Labs Excld	1	2	1	0	Labs Incld	50	Labs Incld	49
Labs not Rcvd	0	0	2	1				

Key to Instrument Codes Reported by Participants

AA	Perkins Model A	AH	Perkins Model AH
AX	Perkins Mullen Tester (model not specified)	LA	L&W Bursting Strength Tester
LB	L&W Burst-O-Matic	LC	L&W Autoline
LJ	L&W Bursting Strength Tester J-Type	LZ	L&W (model not specified)
RE	Regmed/Mullen Tester	TB	TMI Monitor/Burst 1000
TP	Technidyne PROFILE/Plus	XX	Instrument make/model not specified by lab

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2LX93C	96.4	No Data	No Data	No Data	96.4	2.07 *	3.9	0.0 L	93.5	1.40	3.8	3.2	13	TC
2WVAFG	82.5	82.7	84.5	85.5	83.8	-0.85	4.8	1.4	92.3	1.11	4.1	5.6	16	LD
3GYG8K	70.7 XH	72.5 XH	70.8 X	72.9 X	71.7	-3.65 X	7.2	1.1	75.7	-2.62 *	6.2	3.1	16	MB
4MJWBH	81.9	91.2	84.8	91.4	87.3	-0.03	4.7	4.7	86.7	-0.14	4.3	3.1	15	LC
4NZT4H	87.7	86.2	85.7	84.1	85.9	-0.36	3.7	1.5	85.4	-0.42	3.7	1.9	16	LD
4Q4NMK	90.7	89.3	88.2	90.1	89.6	0.49	4.2	1.1	88.4	0.24	3.7	1.7	16	LC
6DWVV9	82.7	81.9	83.2	84.4	83.1	-1.03	5.3	1.0	83.1	-0.95	4.5	5.3	15	LC
6LNDAG	81.9	84.8	85.0	82.4	83.5	-0.92	4.8	1.6	83.2	-0.93	4.1	2.0	16	EN
742EJA	82.5	76.4 *	82.9	77.4 *	79.8	-1.78	4.3	3.4	76.1	-2.52 *	4.7	5.7	16	MB
7Y7KL9	92.7	94.7	91.4	87.5	91.6	0.95	4.1	3.0	91.8	1.01	4.2	2.3	16	LD
8D3R4P	90.8	91.6	91.5	90.6 L	91.1	0.85	2.9	0.5 L	92.5	1.16	3.2	2.5	12	LD
8UAF79	84.9	81.2	83.2	82.0	82.8	-1.08	4.2	1.6	82.8	-1.00	4.0	1.7	16	LD
9F4EWJ	86.4	87.0	86.4	85.2	86.2	-0.29	3.6	0.8	87.1	-0.04	2.8	1.6	12	WK
9UQWYG	90.1	91.2	88.2	84.1	88.4	0.22	4.6	3.1	85.0	-0.52	4.2	6.5 H	16	LC
AAZZY2	85.6	86.8	89.7	86.8	87.2	-0.06	3.9	1.8	87.5	0.04	7.5	2.1	16	LC
AUK3RF	89.9 L	89.4	87.7	88.1	88.8	0.30	2.9	1.0	88.7	0.31	3.4	2.3	16	LD
BP6REC	95.5	94.3	83.1 H	94.5	91.9	1.02	14.8	5.9 H	92.3	1.12	8.6	3.7	14	LC
BZQVMB	89.1	86.2	85.7 L	88.2	87.3	-0.04	3.7	1.6	85.5	-0.42	3.1	1.6	16	LD
CW4TUW	81.1	86.0	86.9	82.2	84.1	-0.79	4.3	2.8	85.9	-0.32	4.6	3.5	12	EM
CZ44QW	84.5	82.5	80.6	79.6	81.8	-1.32	3.7	2.2	83.6	-0.84	3.5	1.9	16	EM
CZYMRX	86.3	86.4	85.5	87.6	86.5	-0.23	4.2	0.8	87.0	-0.07	3.7	1.0	16	TH
EM9CHX	86.3	85.4	87.8 L	86.4	86.5	-0.23	3.9	1.0	85.5	-0.41	3.3	1.4	16	LD
FBQCY9	94.8	94.0	90.8	86.5	91.5	0.94	4.4	3.8	89.5	0.49	4.4	3.0	16	LZ
FEQMV9	86.1	82.7	80.7	86.0	83.9	-0.83	4.7	2.7	81.9	-1.22	3.8	5.6	15	LZ
FJ4VAF	88.7	87.4	89.8	87.7	88.4	0.22	3.6	1.1	88.2	0.19	3.5	1.5	16	LD
GFFCTU	86.2	85.8	84.1 L	84.9	85.3	-0.51	3.9	0.9	86.4	-0.20	3.8	1.4	16	LC
GGRNV7	87.4	86.1	81.4	84.1	84.7	-0.63	3.7	2.6	88.2	0.21	3.7	3.2	16	LD
GGV9KU	87.9	87.7	85.2	88.6	87.4	-0.03	3.9	1.5	89.9	0.58	4.1	4.3	16	LD
GL3YMZ	79.1	79.1	80.2 L	78.2 *	79.2	-1.93	2.2	0.8	80.2	-1.59	2.1	1.5	16	EX
H8ZR9V	76.5 *	76.5 *	73.2 XL	82.8	77.2	-2.37 *	2.5	4.0	80.4	-1.55	4.9	9.1 H	16	LC
H9V9LR	86.6	90.8	No Data	89.4	88.9	0.33	3.9	2.1	92.2	1.10	3.8	3.6	12	LD
J7NDEU	87.3 H	87.4	87.5	87.5	87.4	-0.01	6.1	0.1 L	87.5	0.04	4.8	0.7	16	LD
J8JVGV	91.9	91.6	92.3 L	92.8	92.1	1.08	2.1	0.5	92.1	1.08	1.5	1.1	16	TD
JBYM64	90.9	88.7	89.5	89.2	89.6	0.49	4.3	1.0	89.5	0.49	4.0	0.9	16	LD
KMLJX9	87.5	85.9	82.3	85.6	85.3	-0.50	3.2	2.2	85.0	-0.52	3.7	2.2	16	EM

Containerboard Interlaboratory Testing Program

Analysis 215

Ring Crush, 42 lb Linerboard - 42D1

TAPPI Official Test Method T822

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
L248T4	88.2	90.5	87.7	91.9	89.6	0.49	3.0	2.0	89.3	0.44	3.8	2.7	16	EM
LBTTY3	94.0	94.0 H	92.8	97.6 *	94.6	1.65	5.5	2.1	94.5	1.62	5.2	14.4 H	16	LC
LMLCFT	93.4	91.6	90.7 L	92.6	92.1	1.07	3.8	1.2	88.7	0.32	3.3	2.6	16	TH
LZ8NR3	82.2	85.8	85.9	87.6	85.4	-0.49	3.1	2.3	86.2	-0.25	3.5	2.2	16	LC
M2XAXY	85.3	84.6	83.8	85.4	84.8	-0.62	4.0	0.8	83.9	-0.77	3.1	1.0	16	LD
M3TTYZ	91.1 H	89.2 H	113.5 XH	88.4	95.6	1.88	8.6	12.0 H	88.8	0.34	6.1	8.9 H	12	LC
MEQV4U	94.9	96.9	No Data	No Data	95.9	1.96	4.9	1.4	90.0	0.60	7.8	10.2 H	10	LC
MYU9N9	83.6	93.7	85.0	87.4	87.4	-0.01	4.9	4.5	88.5	0.26	4.8	3.7	8	XX
PEFCJ3	64.9 X	64.9 X	65.9 X	66.0 X	65.5	-5.11 X	2.5	0.6	66.1	-4.78 X	1.9	6.6 H	12	XX
PKQURP	84.3	85.5	87.1	86.1	85.8	-0.40	4.7	1.2	80.8	-1.47	5.9	5.2	16	LD
QR2FDX	98.2 *	104.5 X	104.6 XL	96.9 *	101.1	3.16 X	5.0	4.1	96.9	2.16 *	4.7	4.2	16	LX
UDTV4V	88.3	80.6	83.9	79.5	83.1	-1.02	3.9	3.9	81.6	-1.29	5.9	5.1	16	LC
UG74H3	81.2	85.6	87.8	87.9	85.6	-0.43	4.7	3.1	85.6	-0.38	4.7	3.1	4	TH
UKQNCP	93.3	93.0	91.2	90.5	92.0	1.04	3.2	1.4	91.0	0.83	5.0	4.2	16	LC
UQGXMN	89.8 L	89.2 L	87.5 L	88.8 L	88.8	0.31	1.3	1.0	88.8	0.34	2.3	0.7 L	16	LZ
VPZ2UN	83.3	85.3	83.1	85.4	84.2	-0.75	4.1	1.3	83.6	-0.83	3.6	1.2	16	LD
VZX28T	84.9	84.5	85.5	91.4	86.6	-0.21	3.7	3.2	87.1	-0.05	4.1	2.3	16	LC
WC628X	89.3	88.0	81.6	84.0	85.7	-0.41	4.3	3.6	90.2	0.65	3.8	3.4	16	LZ
WNYNLL	85.7	85.7	84.9	85.6	85.5	-0.47	3.4	0.4 L	86.6	-0.16	3.8	1.5	16	LD
X3DBBA	97.9 *	92.6	94.6 *	91.4	94.1	1.54	3.7	2.9	97.1	2.19 *	4.2	3.4	14	LZ
XGYNMK	100.3 *	99.8 *	97.1 X	98.3 *	98.9	2.64 *	4.5	1.5	94.8	1.68	5.2	6.1 H	16	LC
XX8HGE	86.4 H	88.8	86.6	90.6	88.1	0.14	5.0	2.0	89.0	0.38	4.4	1.5	16	EM
Y39DDJ	86.0	87.5	84.6	84.0	85.5	-0.45	3.7	1.6	85.3	-0.45	4.2	1.5	16	LC
ZME6VC	92.3	92.4	90.8 L	92.7	92.0	1.06	3.5	0.9	92.5	1.16	4.7	4.3	12	MB

Consensus (All Labs) Results

Wk Mean	87.87	87.58	86.29	87.18	Month Mean	87.47	Grand Mean	87.31
Avg SDr	4.03	3.90	5.69	4.34	Avg SDr	4.56	Avg SDr	4.42
SD btwn Labs	4.99	4.72	3.37	4.28	SD btwn Labs	4.31	SD btwn Labs	4.45
Labs Incld	56	54	49	54	SD btwn Wks	2.82	SD btwn Wks	3.80
Labs Excld	2	3	6	2	Labs Incld	55	Labs Incld	57
Labs not Rcvd	0	1	3	2				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
EX	Emerson (model not specified)	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LX	L&W 506
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
TC	TMI Monitor/Compression Tester, Model 17-37	TD	TMI Digital Crush Tester, Model 17-09
TH	TMI Compression Tester, Model 17-76	WK	Zwick Z005 Crush Tester
XX	Instrument make/model not specified by lab		

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2LX93C	138.8	No Data	No Data	No Data	138.8	0.98	3.7	0.0 L	135.0	0.55	4.5	2.8	9	TC
2WVAFG	125.0	128.3	123.8	125.6	125.7	-0.52	4.1	1.9	132.9	0.28	3.8	6.3	12	LD
3GYG8K	123.2 H	114.1	120.8 H	123.7 H	120.4	-1.12	10.8	4.4	120.5	-1.26	9.6	3.3	8	MB
4MJWBH	128.8	139.7	137.6	144.0	137.5	0.84	4.7	6.4	134.0	0.42	4.8	5.9	11	LC
4NZT4H	133.0	132.9	129.8	129.3	131.3	0.12	3.7	2.0	127.4	-0.40	4.2	3.7	12	LD
4Q4NMK	124.3	124.6	126.9	126.3	125.5	-0.54	4.7	1.3	125.8	-0.60	3.9	5.2	12	LC
6DWVV9	135.2	122.0	126.2 H	114.5 H	124.5	-0.66	18.5	8.6 H	122.5	-1.00	13.3	6.0	12	LC
6LNDAG	125.5	126.9	128.8	125.7	126.7	-0.40	5.4	1.5	125.7	-0.61	4.4	4.1	12	EN
742EJA	110.2 *	113.3	116.5	112.3	113.1	-1.96	5.4	2.6	112.1	-2.29 *	5.3	2.8	8	MB
7Y7KL9	144.4	143.2 L	144.3 L	148.5	145.1	1.70	2.9	2.3	144.9	1.78	3.4	2.1	8	LD
8D3R4P	145.6	147.1	145.4	146.9	146.2	1.84	4.0	0.9	147.2	2.06 *	4.9	3.2	8	LD
8UAF79	114.7	118.5	117.7	120.0	117.7	-1.43	4.6	2.2	118.7	-1.47	4.2	1.8	12	LD
9F4EWJ	122.9	122.0	121.8	120.5 L	121.8	-0.96	3.6	1.0	122.6	-0.99	3.2	2.9	12	WK
9UQWYG	127.2	132.1	128.6	125.6	128.4	-0.21	3.6	2.8	127.2	-0.42	4.1	4.2	12	LC
AAZZY2	133.7	135.9	126.0	137.5	133.3	0.35	4.7	5.1	131.2	0.07	3.8	5.0	12	LC
AUK3RF	127.5	128.6	127.0	127.2	127.6	-0.30	3.3	0.7 L	127.8	-0.34	3.3	1.0	12	LD
BP6REC	151.3 *	148.5 *	149.2 *L	146.3	148.8	2.13 *	3.6	2.1	147.8	2.13 *	4.9	2.5	12	LC
BZQVMB	124.5	126.9	122.7	No Data	124.7	-0.63	4.0	2.1	124.2	-0.79	3.4	1.4	11	LD
CW4TUW	122.9	137.7	128.1	133.4	130.5	0.03	4.0	6.4	135.8	0.65	3.9	7.1	8	EM
CZ44QW	129.6	130.5	132.3	125.2	129.4	-0.10	5.2	3.0	128.5	-0.26	5.3	2.0	12	EM
CZYMRX	129.9	128.6	131.9	131.5	130.5	0.03	3.6	1.5	131.6	0.13	3.2	2.1	12	TH
EM9CHX	122.8	121.7	123.2 L	122.4	122.5	-0.89	3.4	0.6 L	122.0	-1.06	3.2	1.0	12	LD
FBQCY9	128.1	130.7	126.8	125.2	127.7	-0.29	3.9	2.3	128.0	-0.32	4.0	2.3	12	LZ
FEQMV9	131.3	120.9	135.8 L	134.7	130.7	0.05	4.0	6.8	127.3	-0.40	4.0	9.6 H	11	LZ
FJ4VAF	126.7 L	127.9	133.5	131.1	129.8	-0.05	3.8	3.1	130.6	0.00	4.1	2.9	8	LD
GFFCTU	133.1	130.3 L	130.7	134.4	132.1	0.22	3.8	2.0	132.6	0.24	4.0	1.5	8	LC
GGRNV7	139.5	125.4	123.4	124.6	128.2	-0.23	4.1	7.6	128.2	-0.30	4.9	4.2	12	LD
GGV9KU	137.2	132.6	130.3	128.2	132.1	0.21	3.7	3.9	132.0	0.17	4.0	4.5	12	LD
GL3YMZ	121.9	124.4 L	123.0 L	122.9	123.1	-0.82	2.7	1.1	124.1	-0.80	2.8	2.7	12	EX
H8ZR9V	120.8	111.9	115.4 L	115.9 L	116.0	-1.63	3.0	3.6	120.5	-1.25	4.1	5.7	12	LC
H9V9LR	123.6	131.3	No Data	127.5	127.5	-0.32	6.1	3.9	133.4	0.35	4.6	6.5	8	LD
J7NDEU	132.2	122.3 H	132.6	132.5	129.9	-0.04	16.1	5.1	131.9	0.16	9.8	3.0	12	LD
J8JVGV	146.1 *	149.4 *L	146.3 *	150.8 L	148.1	2.05 *	2.5	2.3	147.8	2.14 *	2.1	2.5	12	TD
JBYM64	129.6	128.1	129.5	130.4	129.4	-0.10	4.6	1.0	128.4	-0.28	3.9	2.0	12	LD
KMLJX9	127.3	122.5	120.7	126.1	124.1	-0.70	5.4	3.1	127.3	-0.41	4.2	7.9 H	12	EM

Containerboard Interlaboratory Testing Program

Analysis 216

Ring Crush, 69 lb Linerboard - 69C2

TAPPI Official Test Method T822

Report #560 (E)
May 2016

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
L248T4	125.5	123.0	126.8	124.6	125.0	-0.60	4.0	1.6	124.7	-0.73	3.9	1.6	12	EM
LBTTY3	144.9	148.8 *	141.6	148.7	146.0	1.81	6.1	3.4	143.7	1.63	6.4	9.1 H	12	LC
LMLCFT	130.6	129.4	130.7	130.9	130.4	0.02	3.3	0.7 L	128.6	-0.25	3.7	1.7	12	TH
LZ8NR3	123.4	127.3 L	135.3	124.7	127.7	-0.29	2.8	5.3	128.6	-0.25	3.0	4.4	12	LY
M2XAXY	122.0	124.2	125.5	No Data	123.9	-0.73	4.9	1.7	123.7	-0.85	3.8	1.7	11	LD
M3TTYZ	129.1	159.7 X	137.5	151.3	144.4	1.62	5.9	13.7 H	149.0	2.29 *	5.3	10.3 H	8	LC
MEQV4U	136.9	144.4	No Data	No Data	140.7	1.19	4.2	5.3	143.5	1.60	4.8	5.0	6	LC
MYU9N9	131.8 H	130.2	135.0	134.4	132.8	0.30	4.7	2.2	132.8	0.28	4.7	2.2	4	XX
PEFCJ3	107.4 *	109.4 *	107.8 *	107.7 *	108.1	-2.54 *	3.8	0.9	97.3	-4.13 X	2.9	11.5 H	8	XX
PKQURP	124.1	124.0	124.9	122.3	123.8	-0.73	4.4	1.1	117.1	-1.68	8.8	9.9 H	12	LD
QR2FDX	160.2 X	163.6 X	163.7 XL	158.8 *	161.6	3.59 X	3.5	2.5	154.7	2.99 X	4.4	5.6	12	LX
UDTV4V	127.4	126.5	127.8 L	119.9	125.4	-0.55	3.3	3.7	125.9	-0.58	6.2	3.9	8	LC
UG74H3	135.7	127.8	131.8	128.2	130.9	0.07	4.3	3.7	130.9	0.04	4.3	3.7	4	TH
UKQNCP	130.5 H	130.7	121.4	123.9	126.6	-0.41	5.8	4.7	129.7	-0.11	5.5	5.2	12	LC
UQGXMN	131.2	133.4 L	132.6	132.7	132.5	0.26	3.6	0.9	131.2	0.07	3.6	1.6	12	LZ
VPZ2UN	126.8	127.2	126.1 L	125.5	126.4	-0.44	2.8	0.8	126.6	-0.50	3.2	1.4	12	LD
VZX28T	131.1	134.9	136.3	140.3	135.7	0.62	5.2	3.8	137.3	0.84	4.7	3.1	12	LC
WC628X	124.4	123.2	121.2 L	121.8	122.7	-0.87	2.7	1.4	122.3	-1.03	2.5	5.4	12	LZ
WNYNLL	131.7	132.6	131.8	131.4 L	131.8	0.18	3.8	0.5 L	132.4	0.23	3.5	1.9	12	LD
X3DBBA	137.0 L	144.1	138.7	127.8	136.9	0.76	3.4	6.8	139.9	1.15	4.6	5.3	12	LZ
XGYNMK	156.0 X	150.2 *	154.0 X	151.8	153.0	2.61 *	4.4	2.5	143.7	1.63	4.7	11.6 H	12	LC
XX8HGE	139.6	138.9	141.3	141.6	140.4	1.16	5.5	1.3	135.5	0.61	4.7	5.8	12	EM
Y39DDJ	137.7	135.5	132.0	133.2	134.6	0.50	4.4	2.5	131.2	0.07	3.8	4.6	12	LC
ZME6VC	139.4	141.2	134.9	147.4	140.7	1.20	4.2	5.2	140.7	1.25	5.3	5.2	12	MB

Consensus (All Labs) Results

Wk Mean	129.66	129.80	129.35	130.57	Month Mean	130.23	Grand Mean	130.59
Avg SDr	4.43	6.16	6.19	4.69	Avg SDr	5.41	Avg SDr	4.93
SD btwn Labs	8.21	9.24	8.05	10.71	SD btwn Labs	8.73	SD btwn Labs	8.05
Labs Incld	56	55	53	54	SD btwn Wks	3.97	SD btwn Wks	4.73
Labs Excld	2	2	2	0	Labs Incld	57	Labs Incld	56
Labs not Rcvd	0	1	3	4				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200	EN	Emerson 2200
EX	Emerson (model not specified)	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LX	L&W 506
LY	L&W Crush Tester 958	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TC	TMI Monitor/Compression Tester, Model 17-37
TD	TMI Digital Crush Tester, Model 17-09	TH	TMI Compression Tester, Model 17-76
WK	Zwick Z005 Crush Tester	XX	Instrument make/model not specified by lab

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2LX93C	23.2 L	23.7 L	23.2 L	23.0 L	23.3	0.33	0.4	0.3	23.1	0.37	0.5	0.8	16	LA
2WVAFG	17.9 X	18.4 X	18.4 *	18.4 *	18.3	-3.08 X	1.5	0.3	22.3	-0.27	1.9	2.6 H	16	XX
38WW8D	23.7	23.8	22.7	22.7	23.2	0.31	1.9	0.6	23.2	0.43	2.1	1.1	16	LA
3GYG8K	24.6 L	24.1 L	25.0	23.8 L	24.4	1.08	0.6	0.5	24.9	1.73	0.4	0.9	16	BK
4MJWBH	22.4	22.7	22.8	22.3	22.6	-0.14	2.0	0.3	23.1	0.33	1.9	0.9	15	LW
4NZT4H	21.5	21.5	21.6	21.2	21.4	-0.91	2.0	0.2 L	21.6	-0.83	2.0	0.7	16	LU
4Q4NMK	21.8	20.4	21.2	21.8	21.3	-1.01	1.4	0.7	21.4	-0.99	1.6	0.5	16	LA
6LNDAG	22.1	21.0	20.9	19.8	20.9	-1.27	1.9	0.9	20.8	-1.41	1.9	0.8	16	LY
7E46CQ	24.2	24.3	28.1 X	28.0 X	26.1	2.30 *	2.1	2.2	25.2	2.00	2.1	1.8	8	TT
8D3R4P	23.6	24.0	23.2	24.6	23.9	0.74	2.1	0.6	23.7	0.85	2.2	0.7	12	LA
8UAF79	20.2	21.5	21.6	21.0	21.1	-1.15	1.7	0.6	21.6	-0.80	1.8	0.6	16	LY
99LBYB	21.8	21.0	21.6	22.0	21.6	-0.79	1.5	0.4	21.3	-1.07	1.5	0.6	16	LW
9F4EWJ	23.8	23.3	23.7	23.8	23.6	0.59	1.2	0.2 L	23.7	0.82	1.2	0.3	12	LZ
9UQWYG	23.0	23.0	22.3	21.4	22.4	-0.24	1.6	0.7	22.7	0.06	1.9	0.6	16	LW
A8DTQL	22.3	21.2	22.0	20.6	21.5	-0.87	2.0	0.8	21.4	-0.97	2.0	0.9	14	LY
AAZZY2	21.1	21.5	21.1	21.9	21.4	-0.94	1.8	0.4	21.6	-0.79	1.8	0.7	16	LU
AUK3RF	21.1	21.9	21.4	21.2	21.4	-0.93	1.7	0.3	21.3	-1.01	1.5	0.5	16	BK
B7WNG8	23.6	23.6	23.3	23.4	23.5	0.49	1.5	0.1 L	23.5	0.66	1.6	0.7	16	LU
BJG4K7	24.5	23.8	22.9	23.8	23.8	0.67	2.0	0.7	23.3	0.52	1.9	1.1	16	LZ
BP6REC	25.9 *L	24.4 L	26.8 *L	25.7 *L	25.7	1.99	0.0	1.0	25.2	1.97	0.0	0.9	14	LA
CAQ677	24.4	23.2	24.2	23.4	23.8	0.71	2.1	0.6	24.0	1.08	2.3	0.8	14	LW
CZYMRX	21.5 L	21.2 L	22.1	22.3	21.7	-0.70	0.8	0.5	22.0	-0.52	0.9	0.3	16	TT
EM9CHX	21.1	20.7	20.9	20.6	20.8	-1.33	1.6	0.2 L	20.8	-1.43	1.8	0.5	16	LW
EQ8NEX	21.4 L	21.0 L	21.7 L	21.0 L	21.3	-1.03	0.4	0.3	21.0	-1.28	0.4	0.8	16	LA
F7GYGA	20.4 L	20.8 L	20.7 L	21.2 L	20.8	-1.35	0.0	0.3	21.2	-1.13	0.5	0.6	16	LW
FBQCY9	21.7	22.0	21.8	22.4	22.0	-0.55	1.8	0.3	21.2	-1.11	1.9	0.9	16	LW
FEQMV9	21.7	21.3	20.9	21.8	21.4	-0.93	1.9	0.4	21.5	-0.88	1.7	0.7	16	LZ
FJ4VAF	21.9	21.1	21.6	22.9	21.9	-0.61	2.3	0.8	21.5	-0.87	2.0	0.5	16	LY
GFFCTU	22.8	22.4	20.4	21.3	21.7	-0.72	1.7	1.1	21.4	-0.94	1.9	1.3	16	LW
GGRNV7	23.6	21.1	23.1	21.9	22.4	-0.25	1.3	1.1	22.7	0.05	1.8	1.2	16	LA
GWN3VZ	45.9 XL	45.2 XL	43.2 XL	45.5 XL	44.9	15.14 X	0.1	1.2	34.4	9.05 X	1.2	11.1 H	16	LU
H9V9LR	22.1	22.7	No Data	20.7	21.8	-0.64	2.4	1.1	22.4	-0.19	2.0	1.0	12	LZ
JBYM64	23.5	25.0	22.0	21.2	22.9	0.12	1.8	1.7	23.7	0.83	2.0	1.1	16	LY
KMLJX9	22.0	24.0	23.4	24.4	23.5	0.46	1.5	1.1	23.5	0.65	2.0	1.0	16	LZ
LBTTY3	22.8 L	20.5 L	18.1 XL	20.3 L	20.4	-1.62	0.0	1.9	21.3	-1.06	0.4	1.3	15	LW

Containerboard Interlaboratory Testing Program

Analysis 223

STFI, 42 lb Linerboard - 42D1

TAPPI Provisional Test Method T826

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
LZ8NR3	20.7	22.0	22.6	22.1	21.8	-0.63	1.8	0.8	21.7	-0.71	1.9	0.6	16	LW
M3TTYZ	23.4 L	37.7 X	23.4 L	22.2 L	26.7	2.68 *	0.9	7.3 H	25.0	1.84	1.4	5.7 H	12	LA
MUHQDZ	22.9	23.7	22.5	22.5	22.9	0.07	2.0	0.6	23.1	0.37	2.0	0.8	16	LU
MYU9N9	24.3 L	23.5 L	23.6 L	24.9 L	24.1	0.88	0.1	0.7	24.0	1.08	0.1	0.8	8	XX
PKQURP	21.0	21.8	21.0	21.7	21.4	-0.96	1.8	0.4	21.5	-0.91	1.9	0.7	16	LY
RCLWWH	22.5	22.0	22.7	22.7	22.5	-0.21	0.9	0.3	22.4	-0.16	0.9	0.2 L	16	TT
TYRZ9N	24.4	23.9	25.2	25.9 *	24.8	1.41	1.3	0.9	24.0	1.03	1.5	0.9	16	XX
UDTV4V	20.8	22.6	22.0	20.6	21.5	-0.88	2.3	1.0	20.8	-1.39	1.8	1.1	16	XX
UKQNCP	23.4	23.0	21.8 L	23.0	22.8	0.01	0.9	0.7	23.0	0.29	0.9	1.0	12	LY
VPZ2UN	22.0	21.4	21.2	21.8	21.6	-0.78	2.0	0.4	21.4	-0.94	1.7	0.4	16	LW
VZX28T	22.7	24.1	23.1	24.0	23.5	0.50	1.4	0.7	23.1	0.34	1.6	0.5	16	LU
WNYNLL	22.0	22.9	22.4	23.0	22.6	-0.14	1.8	0.5	22.1	-0.45	1.6	0.5	16	LA
WZR82R	25.6 *	25.5 *	26.2 *	25.6	25.7	2.01 *	2.0	0.3	25.2	1.95	2.0	0.8	16	LA
XGYNMK	24.4	23.6	26.6 *	25.0	24.9	1.45	1.8	1.3	24.2	1.17	1.5	1.0	16	LU
Y39DDJ	22.6 L	23.3 L	23.3 L	22.7 L	23.0	0.14	0.4	0.4	22.3	-0.24	0.4	0.8	16	LA
ZME6VC	21.7 L	22.3 L	22.8 L	22.3 L	22.3	-0.34	0.1	0.5	22.3	-0.25	0.1	0.8	12	LA

Consensus (All Labs) Results

Wk Mean	22.69	22.65	22.57	22.47	Month Mean	22.77	Grand Mean	22.64
Avg SDr	1.58	1.68	1.62	1.63	Avg SDr	1.64	Avg SDr	1.67
SD btwn Labs	1.34	1.28	1.61	1.58	SD btwn Labs	1.46	SD btwn Labs	1.30
Labs Incld	47	46	46	47	SD btwn Wks	1.31	SD btwn Wks	1.22
Labs Excld	2	3	2	2	Labs Incld	47	Labs Incld	48
Labs not Rcvd	0	0	1	0				

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	LA	L&W Autoline
LU	L&W 52 without moisture correction(was 53)	LW	L&W 53 with moisture correction (was 53M)
LY	L&W 152 without moisture correction	LZ	L&W (model not specified)
TT	TMI Short Span Compression, 17-34 (MB K455)	XX	Instrument make/model not specified by lab

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2LX93C	31.3	31.7 L	31.4	32.6 L	31.8	-0.63	0.7	0.6	32.3	-0.44	0.7	1.6	12	LA
2WVAFG	28.3 *	26.6 *	26.8 *	27.7 *	27.4	-2.47 *	1.3	0.8	31.5	-0.82	1.6	3.1	12	XX
38WW8D	35.4	33.1	34.1	32.0	33.6	0.15	1.9	1.4	34.5	0.56	1.7	1.2	12	LA
3GYG8K	35.0 L	36.4	36.4	36.2	36.0	1.16	0.9	0.7	36.5	1.48	0.8	1.0	8	BK
4MJWBH	32.3	33.2	32.7	31.9	32.5	-0.31	1.7	0.6	33.1	-0.09	1.6	1.1	11	LW
4NZT4H	32.0	31.6	31.9	31.0	31.6	-0.68	1.5	0.4	34.4	0.50	1.9	8.7 H	12	LU
4Q4NMK	32.2	31.1	32.6	32.3	32.1	-0.50	1.3	0.7	31.6	-0.75	1.6	0.7	12	LA
6LNDAG	34.3	29.7	31.2	30.4	31.4	-0.78	1.7	2.0	31.0	-1.03	1.8	1.1	12	LY
7E46CQ	36.2	36.0	35.4	36.4	36.0	1.15	1.6	0.4	32.4	-0.38	1.6	3.8	8	TT
8D3R4P	31.9	34.6	33.0	36.2	33.9	0.28	1.5	1.9	34.9	0.74	1.7	1.8	8	LA
8UAF79	31.2	30.7	31.2	31.1	31.1	-0.92	1.8	0.2 L	31.1	-0.99	1.7	0.5	12	LY
99LBYB	30.6	30.9	30.1	31.1	30.7	-1.07	1.8	0.4	30.8	-1.15	1.5	0.4 L	12	LW
9F4EWJ	34.9	34.1	34.3	34.4	34.4	0.49	0.8	0.3 L	34.0	0.35	1.1	0.9	12	LZ
9UQWYG	34.6	34.4	34.8	33.3	34.3	0.43	1.6	0.7	34.2	0.44	1.6	0.6	12	LW
A8DTQL	32.7	30.8	32.5	32.2	32.0	-0.51	1.7	0.9	41.1	3.61 X	2.1	12.6 H	12	LY
AAZZY2	31.2	31.2	31.1	31.6	31.3	-0.83	1.7	0.2 L	28.8	-2.09 *	1.7	8.6 H	12	LU
AUK3RF	31.6	30.6	30.5	30.6	30.8	-1.03	1.2	0.5	30.9	-1.08	1.3	0.6	12	BK
B7WNG8	34.9	34.8	37.2	37.6	36.1	1.19	1.5	1.5	35.2	0.89	1.4	1.2	12	LU
BJG4K7	36.7	37.2	34.6	36.0	36.1	1.20	1.6	1.1	36.0	1.26	1.8	1.0	12	LZ
BP6REC	35.0 L	37.3 L	37.5 L	37.1 L	36.7	1.46	0.0	1.2	36.4	1.44	0.0	0.9	12	LA
CAQ677	37.3	35.4	35.9	36.7	36.3	1.29	1.9	0.8	36.0	1.27	2.2	0.7	11	LW
CZYMRX	32.6	32.8	32.5	32.3	32.5	-0.30	1.1	0.2 L	33.0	-0.14	1.1	0.4 L	12	TT
EM9CHX	31.4	32.1	32.4	31.2	31.8	-0.62	1.7	0.6	31.8	-0.68	1.7	0.5	12	LW
EQ8NEX	31.8 L	30.6 L	31.1 L	30.3 L	30.9	-0.97	0.4	0.6	30.8	-1.15	0.5	0.9	12	LA
F7GYGA	31.9 L	32.5 L	32.5 L	34.8 L	32.9	-0.13	0.0	1.3	33.2	-0.03	1.9	0.9	12	LW
FBQCY9	33.6	33.4	32.6	32.8	33.1	-0.08	1.9	0.5	32.6	-0.30	1.7	0.7	12	LW
FEQMV9	31.6	30.8	31.3	31.7	31.3	-0.80	1.7	0.4	31.3	-0.91	1.6	0.7	11	LZ
FJ4VAF	31.5	30.7	31.7	33.1	31.8	-0.63	2.0	1.0	31.4	-0.87	1.8	0.9	8	LY
GFFCTU	31.5	30.7	32.1	31.3	31.4	-0.78	1.6	0.6	30.4	-1.34	1.6	1.3	8	LY
GGRNV7	33.4	31.9	31.0	31.6	32.0	-0.54	2.1	1.0	32.5	-0.35	1.9	1.2	12	LA
GWN3VZ	61.6 XL	62.4 XL	63.1 XL	63.2 XL	62.6	12.31 X	0.2	0.7	52.3	8.83 X	0.1	13.5 H	12	LU
H9V9LR	32.7	34.5	No Data	31.2	32.8	-0.20	2.1	1.7	34.1	0.40	2.0	1.6	8	LZ
JBYM64	33.1	33.2	30.8	31.0	32.0	-0.51	1.8	1.3	33.5	0.11	1.8	1.3	12	LY
KMLJX9	36.0	35.0	36.4	37.2	36.2	1.22	1.6	0.9	34.5	0.56	1.8	2.1	12	LZ
LBTTY3	No Data	31.6 L	24.6 XL	33.5 L	29.9	-1.41	0.0	4.7 H	31.4	-0.84	2.0	2.5	11	LW

Containerboard Interlaboratory Testing Program

Analysis 224

STFI, 69 lb Linerboard - 69C2

TAPPI Provisional Test Method T826

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
LZ8NR3	30.8	31.5	31.1	30.8	31.0	-0.93	1.7	0.3 L	31.8	-0.70	1.6	0.7	12	LW
M3TTYZ	36.1 L	51.5 X	34.7 L	21.2 X	35.9	1.09	1.1	12.4 H	35.8	1.19	1.3	8.3 H	8	LA
MUHQDZ	35.4	33.8	32.7	32.6	33.6	0.16	1.7	1.3	34.2	0.44	2.2	1.4	12	LU
MYU9N9	36.0 L	36.0 L	35.4 L	35.9 L	35.8	1.08	0.1	0.3 L	35.8	1.18	0.1	0.3 L	4	XX
PKQURP	31.2	30.8	30.5	31.8	31.1	-0.92	1.5	0.6	31.4	-0.85	1.6	0.5	12	LY
RCLWWH	33.6	33.4	33.7	33.6	33.6	0.14	0.9	0.1 L	33.5	0.11	0.9	0.3 L	12	TT
TYRZ9N	38.0 *	36.9 L	37.7	37.5	37.5	1.79	1.9	0.5	35.7	1.11	1.5	1.5	12	LU
UDTV4V	27.9 *	30.8	30.9	30.1	29.9	-1.39	1.7	1.4	29.5	-1.76	2.0	1.2	8	XX
UKQNCP	37.2	38.9 *	37.5	38.3	38.0	1.98	1.4	0.8	37.8	2.09 *	1.4	1.8	9	LY
VPZ2UN	30.4	30.7	30.2	31.8	30.8	-1.04	1.6	0.7	30.9	-1.09	1.6	0.5	12	LW
VZX28T	34.4	35.9	35.1	34.6	35.0	0.73	2.3	0.6	34.6	0.62	1.9	0.6	12	LU
WNYNLL	31.8	32.7	32.5	32.3	32.3	-0.40	1.2	0.4	32.2	-0.52	1.5	0.5	12	LA
WZR82R	36.5	37.1	37.4	37.2	37.0	1.58	1.9	0.4	36.9	1.67	1.8	0.4 L	12	LA
XGYNMK	36.0	37.2	37.4	36.8	36.8	1.50	1.7	0.6	36.1	1.33	1.5	0.8	12	LU
Y39DDJ	32.0 L	32.6 L	32.0 L	31.5 L	32.0	-0.52	0.5	0.4	31.8	-0.66	0.5	0.7	12	LA
ZME6VC	32.0 L	34.8 L	33.7 L	34.8 L	33.8	0.25	0.1	1.3	34.2	0.41	0.1	1.4	12	LA

Consensus (All Labs) Results

Wk Mean	33.28	33.19	33.17	33.23	Month Mean	33.25	Grand Mean	33.27
Avg SDr	1.51	1.55	1.46	1.65	Avg SDr	1.55	Avg SDr	1.56
SD btwn Labs	2.36	2.57	2.50	2.57	SD btwn Labs	2.38	SD btwn Labs	2.16
Labs Incld	48	47	47	47	SD btwn Wks	1.99	SD btwn Wks	2.47
Labs Excld	1	2	1	2	Labs Incld	48	Labs Incld	47
Labs not Rcvd	1	0	1	0				

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	LA	L&W Autoline
LU	L&W 52 without moisture correction (was 53)	LW	L&W 53 with moisture correction (was 53M)
LY	L&W 152 with moisture correction	LZ	L&W (model not specified)
TT	TMI Short Span Compression, 17-34 (MB K455)	XX	Instrument make/model not specified by lab

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
38WW8D	119.5	-0.69	5.1	116.8	-0.98	11.5	4	LA
3GYG8K	148.0	1.06	17.9	142.1	0.62	15.7	4	EV
4NZT4H	143.6	0.79	13.9	141.4	0.58	12.4	4	EV
6LNDAG	154.7	1.47	14.6	155.9	1.50	11.6	4	EV
7Y7KL9	112.3	-1.13	11.7	112.5	-1.25	11.7	4	EV
8D3R4P	123.0	-0.48	14.4	122.3	-0.63	11.8	3	XX
9UQWYG	136.5	0.35	9.3	138.8	0.41	9.6	4	EV
B7WNG8	151.0	1.24	20.2	144.5	0.78	14.9	3	EV
BJG4K7	128.8	-0.12	14.5	153.9	1.37	55.7	4	LA
BP6REC	125.3	-0.34	11.7	124.6	-0.48	14.9	4	LA
EQ8NEX	121.3	-0.58	7.8	115.1	-1.09	8.8	4	EV
FBQCY9	142.3	0.71	11.2	134.5	0.14	12.5	4	EV
H9V9LR	145.8	0.92	15.4	148.8	1.05	14.8	4	LA
LBTTY3	153.4	1.39	11.6	141.2	0.57	13.1	4	EV
M3TTYZ	128.6	-0.13	18.0	134.6	0.15	18.8	3	LA
MYU9N9	141.0	0.63	15.7	135.4	0.20	15.9	2	EV
PKQURP	107.2	-1.45	7.8	137.2	0.32	11.5	4	EV
UKQNCP	102.7	-1.72	11.3	94.6	-2.38 *	9.5	3	EV
VPZ2UN	113.6	-1.05	7.8	126.1	-0.39	10.6	4	EV
XC4UPH	127.2	-0.22	9.6	129.2	-0.19	13.7	4	EV
XGYNMK	110.2	-1.26	10.3	111.1	-1.34	10.7	4	LA
Y39DDJ	160.9	1.85	20.7	154.8	1.43	24.3	4	LA
ZME6VC	133.4	0.16	20.7	134.9	0.17	20.3	3	LA

Consensus (All Labs) Results

Month Mean	130.76	Grand Mean	132.22
Avg SDr	13.87	Avg SDr	18.19
SD btwn Labs	16.31	SD btwn Labs	15.78
Labs Incld	22	Labs Incld	22

Key to Instrument Codes Reported by Participants

EV Emveco Microgage Model 210-R
LA L&W Autoline
XX Instrument make/model not specified by lab

Containerboard Interlaboratory Testing Program

Analysis 229

Roughness - Sheffield Method, 42 lb Linerboard - 42D2

TAPPI Provisional Test Method T538

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
2LX93C	365.3	-0.48	10.0	362.1	-0.63	8.5	4	XX
AAZZY2	367.1	-0.42	8.1	366.0	-0.37	9.0	4	XX
GGRNV7	356.1	-0.74	8.2	360.2	-0.76	7.4	3	XX
N3RERX	361.9	-0.57	4.3	363.4	-0.54	8.2	3	XX
WNYNLL	447.8	1.90	1.2	399.2	1.84	8.3	4	XX
X3DBBA	392.7	0.31	9.1	378.5	0.46	7.5	4	XX

Consensus (All Labs) Results

Month Mean	381.82	Grand Mean	371.57
Avg SDr	7.48	Avg SDr	8.16
SD btwn Labs	34.70	SD btwn Labs	15.00
Labs Incld	6	Labs Incld	6

Key to Instrument Codes Reported by Participants

XX Instrument make/model not specified by lab

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
2LX93C	153.0	-0.28	5.2	152.7	-0.53	6.3	4	SC
4NZT4H	146.4	-0.49	6.7	148.2	-0.74	7.1	4	TM
4Q4NMK	202.4	1.24	12.9	203.0	1.77	13.4	4	HY
7Y7KL9	168.8	0.20	4.0	167.6	0.15	3.6	4	HY
96QMH3	168.2	0.19	3.1	164.1	-0.01	4.3	4	TM
AAZZY2	183.3	0.65	4.6	182.9	0.85	4.5	4	HY
B7WNG8	128.8	-1.03	7.9	136.5	-1.27	9.5	4	TM
BJG4K7	142.2	-0.62	8.8	147.3	-0.78	11.9	4	TM
EM9CHX	180.4	0.56	7.0	172.1	0.35	7.3	4	TM
GFFCTU	161.4	-0.02	9.9	158.9	-0.25	8.5	4	XX
LBTTY3	206.0	1.35	11.4	218.3	2.47 *	21.9	4	SC
M2XAXY	181.0	0.58	4.3	176.5	0.56	5.4	4	SC
PKQURP	181.0	0.58	8.2	178.6	0.65	15.5	4	XX
UDTV4V	121.8	-1.25	1.9	131.7	-1.49	5.7	4	SC
VPZ2UN	212.8	1.56	9.4	205.6	1.89	8.6	4	HY
WNYNLL	87.9	-2.30 *	1.0	81.9	-3.76 X	1.9	4	LZ
XGYNMK	138.0	-0.75	4.8	138.4	-1.18	5.0	4	TM
Y39DDJ	200.0	1.17	11.2	164.7	0.02	10.0	4	HY

Consensus (All Labs) Results

Month Mean	162.20	Grand Mean	164.28
Avg SDr	7.28	Avg SDr	8.59
SD btwn Labs	32.35	SD btwn Labs	21.89
Labs Incld	17	Labs Incld	16

Consensus By Method

Test Method	Group Mean	SD btwn Group	Difference from Grand Mean	Labs Included
Scott Bond Type	161.22	27.25	0.98	12
Modified Scott Bond Mechanics	185.83	25.80	23.63	3

Key to Instrument Codes Reported by Participants

HY	Huygen Digitized Scott Internal Bond Tester	LZ	L&W (model not specified)
SC	Scott Internal Bond Tester (Manual)	TM	TMI Monitor/Internal Bond Tester
XX	Instrument make/model not specified by lab		

	Monthly Results			Cumulative Results			
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months
2LX93C	28.8	0.97	1.3	29.1	1.58	1.2	4
4MJWBH	26.6	-0.10	1.8	27.9	0.89	2.4	4
4NZT4H	31.4	2.22 *	0.5	28.7	1.35	2.1	4
6LNDAG	27.2	0.19	1.1	25.3	-0.60	1.2	4
8D3R4P	24.4	-1.16	1.1	24.4	-1.15	1.2	3
9UQWYG	26.8	0.00	1.9	24.2	-1.26	1.4	4
AAZZY2	24.6	-1.06	2.5	24.7	-1.00	1.8	4
B7WNG8	26.6	-0.10	2.9	26.2	-0.10	2.6	4
BJG4K7	28.8	0.97	3.6	29.2	1.64	3.0	4
EM9CHX	27.8	0.50	2.6	25.1	-0.76	2.4	4
KMLJX9	25.4	-0.67	2.1	26.6	0.10	1.9	4
KWRW3V	27.3	0.24	1.3	26.1	-0.14	1.7	4
LBTTY3	26.6	-0.10	3.4	27.7	0.74	2.5	4
MEQV4U	27.2	0.19	0.8	27.3	0.52	1.4	3
PKQURP	27.6	0.39	1.7	32.9	3.75 X	2.8	4
TYRZ9N	22.1	-2.27 *	2.3	23.6	-1.60	1.9	4
VPZ2UN	24.6	-1.06	1.1	24.9	-0.88	1.2	4
WNYNLL	29.2	1.16	0.8	27.6	0.68	0.9	4
XGYNMK	26.4	-0.19	2.4	27.1	0.41	2.2	4
Y39DDJ	26.3	-0.24	0.8	26.9	0.31	1.6	4

Consensus (All Labs) Results

Month Mean	26.80	Grand Mean	26.37
Avg SDr	1.91	Avg SDr	1.87
SD btwn Labs	2.07	SD btwn Labs	1.73
Labs Incld	19	Labs Incld	18

Key to Instrument Codes Reported by Participants

ZZ Instruments No Longer Tracked

Containerboard Interlaboratory Testing Program

Analysis 237

Air Resistance, 36 lb Linerboard - 36Z

TAPPI Official Test Method T460

	Monthly Results			Cumulative Results				
WebCode	Mean	CPV	SDr	Mean	CPV	SDr	Months	Inst
3GYG8K	55.3	2.02 *	1.3	54.5	1.24	2.2	4	XX
4MJWBH	52.3	0.33	2.1	52.9	0.62	1.9	4	LP
8D3R4P	50.4	-0.74	1.9	51.1	-0.05	1.7	3	LA
AAZZY2	53.3	0.88	2.3	52.7	0.53	2.6	4	TP
B7WNG8	45.8	-3.36 X	2.0	45.2	-2.26 *	2.5	4	LA
BJG4K7	41.5	-5.80 X	3.0	44.8	-2.43 *	4.1	4	XX
BP6REC	52.2	0.30	2.7	53.3	0.76	2.4	4	TL
EM9CHX	51.7	0.01	4.0	50.3	-0.35	3.4	4	HG
FJ4VAF	50.4	-0.75	1.7	50.2	-0.39	1.3	4	LP
GGV9KU	50.0	-0.98	1.8	48.1	-1.20	3.5	4	GG
HD8HB2	52.7	0.58	2.3	52.9	0.62	2.1	4	XX
KWRW3V	53.7	1.10	2.1	54.6	1.25	2.7	4	GA
LBTTY3	51.8	0.05	3.7	51.0	-0.11	2.9	4	HG
M2XAXY	51.3	-0.23	1.1	51.7	0.18	1.6	4	LP
M3TTYZ	50.0	-0.99	1.9	50.9	-0.11	1.9	3	LA
MYU9N9	48.0	-2.14 *	1.2	25.3	-9.76 X	0.9	2	LW
PKQURP	53.3	0.88	2.1	52.8	0.60	2.8	4	LP
TYRZ9N	40.4	-6.45 X	1.6	40.8	-3.92 X	2.0	4	LA
UQGXMN	50.0	-0.98	3.1	51.6	0.14	2.1	4	XX
VPZ2UN	51.0	-0.43	1.9	51.4	0.05	1.8	4	LP
WNYNLL	53.7	1.12	2.8	53.5	0.86	2.2	4	LA
XGYNMK	52.7	0.54	2.2	52.2	0.37	1.9	4	LA
Y39DDJ	50.8	-0.52	1.7	50.1	-0.43	1.5	4	LA

Consensus (All Labs) Results

Month Mean	51.72	Grand Mean	51.24
Avg SDr	2.21	Avg SDr	2.41
SD btwn Labs	1.76	SD btwn Labs	2.66
Labs Incld	19	Labs Incld	20

Key to Instrument Codes Reported by Participants

GA	Gurley Precision #4340 Automatic Densometer	GG	Gurley Precision #4320 Densometer
HG	Technidyne - Hagerty Model #1 and Profile System	LA	L&W Autoline
LP	L&W Air Permeance Tester SE 166	LW	L&W Gurley Densometer, Oil Flotation
TL	Teledyne Gurley Densometer #4110, Oil Flotation	TP	Technidyne Profile/ plus Roughness & Porosity
XX	Instrument make/model not specified by lab		

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2CC8KG	55.1	56.1	56.0	54.5 L	55.4	-1.82	1.7	0.8	56.8	-1.44	2.2	1.3	16	EM
2WVAFG	55.5	55.4	56.1	54.9	55.5	-1.79	3.2	0.5	57.4	-1.13	3.0	1.4	16	LD
39RF9E	59.0	61.3	60.9	60.8	60.5	0.63	2.2	1.0	60.8	0.67	3.0	3.5	16	LC
3GYG8K	65.7 *	66.7 X	67.7 X	67.8 XH	67.0	3.75 X	3.8	1.0	64.6	2.64 *	3.2	2.2	12	MB
3HUXKH	60.5 L	61.6	62.2	61.4	61.4	1.09	2.0	0.7	61.7	1.12	2.2	0.6	16	LD
4MJWBH	63.8	63.6	61.4	62.2 L	62.7	1.72	1.9	1.1	61.1	0.80	2.3	1.8	15	LC
4NZT4H	58.6	59.3	59.1	58.6	58.9	-0.15	2.4	0.4	57.7	-0.96	2.6	1.4	16	LD
4Q4NMK	58.9 L	60.5	59.9	61.5	60.2	0.49	1.8	1.1	60.2	0.34	2.1	1.3	16	LC
742EJA	56.6 H	60.4 H	60.1	29.3 X	51.6	-3.66 X	3.2	15.0 H	57.3	-1.15	3.9	7.7 H	16	MB
8D3R4P	57.9	59.9	58.3	59.5	58.9	-0.14	2.0	0.9	58.8	-0.36	2.2	0.8	16	LD
9F4EWJ	59.9	58.7	59.3	59.3	59.3	0.06	2.4	0.5	59.4	-0.06	2.1	0.6	12	LC
AAZZY2	60.4	58.7	61.6	61.0	60.4	0.59	2.3	1.3	61.3	0.90	2.9	1.3	16	LC
B7WNG8	58.5	58.7	62.6	59.3 H	59.8	0.28	4.1	1.9	58.9	-0.32	3.6	2.3	16	XX
CAQ677	56.5	54.2 *	56.9 H	59.2 H	56.7	-1.20	4.3	2.0	55.7	-1.97	3.9	2.0	13	LC
CZYMRX	59.5	60.8	59.0	58.0	59.4	0.08	2.4	1.2	58.8	-0.38	2.4	1.0	16	TH
D8GFG3	53.1 *	54.2 *	55.1	54.0 *	54.1	-2.46 *	2.3	0.8	48.9	-5.53 X	2.1	12.2 H	16	TC
ELUHRH	62.2	60.8	62.3	61.8	61.8	1.24	2.5	0.7	61.9	1.25	2.4	1.2	8	MB
FEQMV9	60.4	59.6	55.7	63.4	59.8	0.28	2.6	3.2 H	60.0	0.26	2.7	2.4	16	LZ
GFFCTU	54.8	56.9	64.0	65.5 *	60.3	0.54	2.1	5.2 H	61.1	0.79	2.0	3.0	16	LC
H8ZR9V	58.0	58.0	59.1 L	58.9 L	58.5	-0.33	1.3	0.6	59.4	-0.07	2.2	1.7	16	LC
H9V9LR	58.1	58.3	No Data	56.5	57.6	-0.76	3.2	1.0	58.9	-0.33	2.5	1.0	12	LD
HD8HB2	62.2	61.7	61.4	60.4 L	61.4	1.09	1.9	0.8	60.5	0.53	2.3	0.9	16	LD
HH2FZR	61.2	60.1	62.3	60.3	61.0	0.85	2.6	1.0	60.2	0.35	2.4	1.6	16	LZ
J7NDEU	59.3	59.4	59.3	59.4	59.4	0.08	2.9	0.0 L	59.3	-0.14	3.1	0.3 L	16	LD
J8JVGV	61.1	62.3	60.0 L	61.2	61.1	0.95	1.5	1.0	62.9	1.75	1.4	2.5	16	TD
JBYM64	56.2	56.1	59.4	57.4	57.3	-0.92	2.0	1.5	57.0	-1.33	1.7	1.0	16	LD
KMLJX9	55.2	57.2	57.3	57.2	56.7	-1.21	2.5	1.0	57.6	-0.99	2.5	1.8	16	LZ
L248T4	62.0	61.5	61.0	62.0	61.6	1.18	2.4	0.5	61.8	1.19	2.8	1.2	16	EM
L3E7PY	59.3	60.0	59.0	58.9	59.3	0.05	2.2	0.5	60.1	0.32	2.0	2.5	16	LD
LZ8NR3	60.9	61.1	61.8	61.7	61.4	1.06	2.1	0.4	61.7	1.13	1.9	1.2	16	LC
MYU9N9	58.9	61.2	58.7	58.2	59.3	0.04	2.4	1.3	58.9	-0.31	3.1	1.2	8	XX
PKQURP	59.5	58.5	60.7	No Data	59.5	0.17	2.6	1.1	58.3	-0.66	2.5	1.1	15	LZ
QR2FDX	54.6	55.3	55.2	54.4	54.8	-2.10 *	2.7	0.4	57.0	-1.34	2.5	1.8	16	LD
QUQ4BJ	60.9	60.7	60.5	61.2	60.8	0.79	1.6	0.3	60.9	0.70	1.6	0.4	15	LC
RCLWWH	62.1 H	61.0 H	60.6	58.7	60.6	0.69	4.2	1.4	60.2	0.35	4.1	1.7	16	TG

Containerboard Interlaboratory Testing Program

Analysis 240

Flat Crush Strength (CMT), 26 lb Corrugating Medium - CM81

TAPPI Official Test Method T809

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
UDTV4V	58.2	61.1	58.3	58.0	58.9	-0.15	3.3	1.5	57.4	-1.12	3.0	1.5	16	LC
UG74H3	58.4	57.7	61.6	60.2	59.5	0.14	1.9	1.7	60.4	0.47	1.9	1.6	16	MB
UNAFNR	60.1	59.5	60.4	60.6 L	60.2	0.46	2.1	0.5	59.1	-0.24	2.1	0.8	16	LC
VPZ2UN	58.6	59.6	58.5	59.1	59.0	-0.11	3.5	0.5	59.9	0.17	3.5	1.4	12	LD
VZX28T	59.0	61.3	61.0	59.9	60.3	0.54	2.0	1.1	60.0	0.24	2.1	1.2	16	LD
WC628X	69.1 X	67.6 XH	69.1 X	70.6 X	69.1	4.79 X	3.6	1.2	62.3	1.44	3.6	6.9 H	16	XX
WNYNLL	56.9	56.0	55.7	56.3	56.2	-1.43	1.9	0.5	58.2	-0.68	2.3	1.9	16	LD
WZR82R	56.1	56.2	57.0	56.6	56.5	-1.32	2.2	0.4	56.2	-1.71	2.1	1.0	16	LD
XGYNMK	58.5	57.8	58.5	60.5 H	58.8	-0.17	3.8	1.2	58.5	-0.53	3.8	1.7	16	LC
XWCWMN	58.9	59.5	60.8	59.8	59.8	0.27	2.3	0.8	59.0	-0.26	2.5	0.8	16	LD
YGRV99	61.9	60.9	63.7	63.8	62.6	1.63	2.2	1.4	62.0	1.28	2.1	1.1	8	TM
ZME6VC	58.7	57.2	55.3	57.8	57.2	-0.95	3.2	1.4	57.2	-1.21	2.9	1.7	12	MB

Consensus (All Labs) Results

Wk Mean	58.95	59.11	59.48	59.39	Month Mean	59.19	Grand Mean	59.53
Avg SDr	2.43	2.51	2.60	2.81	Avg SDr	2.57	Avg SDr	2.67
SD btwn Labs	2.55	2.26	2.36	2.52	SD btwn Labs	2.07	SD btwn Labs	1.92
Labs Incld	46	45	44	43	SD btwn Wks	1.37	SD btwn Wks	2.19
Labs Excld	1	2	2	3	Labs Incld	44	Labs Incld	46
Labs not Rcvd	0	0	1	1				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TC	TMI Monitor/Compression Tester, 17-37
TD	TMI Digital Crush Tester, Model 17-09	TG	TMI Compression Tester, Model 17-10
TH	TMI Compression Tester, Model 17-76	TM	TMI/Hinde & Dauch
XX	Instrument make/model not specified by lab		

Containerboard Interlaboratory Testing Program

Analysis 250

Fluted Edge Crush Strength (CFC), 26 lb Corrugating Medium - CM81

TAPPI Official Method T824

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
3HUXKH	67.9 L	71.6	69.5	70.3	69.8	0.45	2.4	1.5	69.6	0.44	2.4	0.9	16	LD
4MJWBH	67.5	63.7	67.1	69.9	67.1	-0.10	2.9	2.6	64.9	-0.48	2.3	2.1	15	XX
742EJA	54.9 *H	57.9	58.0 *	58.8	57.4	-2.04 *	4.7	1.7	56.6	-2.07 *	2.9	1.3	16	MB
8D3R4P	66.9 L	65.9 L	66.9	66.6	66.5	-0.21	1.7	0.5	66.0	-0.25	2.1	1.5	12	LD
AAZZY2	68.1	71.2	72.1	71.0	70.6	0.61	3.1	1.7	71.7	0.84	2.2	1.6	16	LC
FEQMV9	69.8	71.5	70.9	65.7 H	69.5	0.38	2.9	2.6	69.5	0.41	3.0	2.7	16	LZ
HD8HB2	69.7	70.2	69.7	69.5	69.8	0.44	1.8	0.3	69.3	0.38	2.1	1.3	16	XX
HH2FZR	55.6 *	56.6 H	59.6 H	58.9 H	57.7	-1.98	5.0	1.9	57.6	-1.87	5.3	3.9 H	16	XX
J8JVGV	70.1 L	71.5 L	71.8 L	71.6 L	71.2	0.73	0.9	0.8	71.4	0.78	1.1	1.3	16	TD
L3E7PY	69.5	69.2	69.1	69.5	69.3	0.35	2.3	0.2 L	68.8	0.29	2.0	2.7	16	LD
LZ8NR3	66.7	63.3	64.9	67.9	65.7	-0.37	2.1	2.0	65.2	-0.41	2.3	1.5	16	LC
UQGXMN	68.1 L	67.4	67.4 L	68.0	67.7	0.03	1.1	0.4	67.9	0.12	1.4	0.6	16	XX
VPZ2UN	76.3 L	76.9	76.7	77.1	76.8	1.83	2.3	0.3	76.8	1.82	2.3	0.3 L	4	XX
VZX28T	63.4 L	65.4	65.2	62.5	64.1	-0.70	1.6	1.4	64.7	-0.50	1.8	1.0	16	LD
WNYNLL	69.0	71.3	70.7	70.9	70.5	0.58	2.0	1.0	69.9	0.49	1.9	1.3	16	LD

Consensus (All Labs) Results

Wk Mean	66.90	67.57	67.97	67.87	Month Mean	67.58	Grand Mean	67.32
Avg SDr	3.54	2.58	2.11	2.35	Avg SDr	2.70	Avg SDr	2.52
SD btwn Labs	5.44	5.50	4.79	4.86	SD btwn Labs	5.00	SD btwn Labs	5.17
Labs Incld	15	15	15	15	SD btwn Wks	1.49	SD btwn Wks	1.83
Labs Excld	0	0	0	0	Labs Incld	15	Labs Incld	15
Labs not Rcvd	0	0	0	0				

Key to Instrument Codes Reported by Participants

LC	L&W Crush Tester 48	LD	L&W Crush Tester 248
LZ	L&W Crush Tester (model not specified)	MB	Messmer Buchel K440
TD	TMI Digital Crush Tester, Model 17-09	XX	Instrument make/model not specified by lab

Containerboard Interlaboratory Testing Program

Analysis 255

Ring Crush (RCT), 26 lb Corrugating Medium - CM81

TAPPI Official Test Method T822

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2CC8KG	41.8	40.2	40.2	40.0	40.5	0.77	2.3	0.9	40.5	0.71	1.9	1.5	16	LC
39RF9E	27.9 *	26.8 *L	25.4 *	26.0 *	26.5	-2.49 *	2.0	1.1	25.2	-6.50 X	2.1	3.5 H	16	XX
3HUXKH	40.3 L	41.0	41.8 L	40.6	40.9	0.86	1.2	0.6	40.5	0.70	1.6	0.5	16	LD
4MJWBH	33.0	40.2	34.9	40.5	37.1	-0.02	2.0	3.8 H	36.7	-1.11	2.5	2.9 H	12	LC
742EJA	28.7	32.2	32.3	30.3	30.9	-1.48	2.3	1.7	30.5	-3.99 X	2.4	1.6	16	MB
8D3R4P	40.2	41.3	41.5	39.9	40.7	0.81	1.8	0.8	40.7	0.78	2.0	1.1	16	LD
9F4EWJ	40.6	40.4	40.2 H	40.0	40.3	0.71	2.8	0.3 L	40.8	0.85	2.4	0.8	12	WK
AAZZY2	39.2	39.0	38.8	39.1	39.0	0.41	1.8	0.2 L	39.6	0.26	1.9	1.1	16	LC
C2FB3K	38.3	38.5	34.1	34.1	36.3	-0.23	2.6	2.5	36.0	-1.40	3.2	2.1	16	LZ
D8GFG3	27.5 *H	27.5 *H	28.3 H	26.1 *	27.4	-2.30 *	3.7	0.9	26.3	-5.97 X	3.6	1.6	16	TC
G3UWPV	35.8 L	35.5 L	35.0	34.6 L	35.2	-0.47	0.8	0.5	35.5	-1.67	1.1	0.7	16	WK
H8ZR9V	34.8 L	33.6 L	33.5	34.8 L	34.2	-0.71	1.0	0.7	35.1	-1.82	1.5	1.3	16	LC
H9V9LR	38.5	41.1	No Data	38.1	39.2	0.46	2.1	1.6	40.4	0.66	2.1	1.8	12	LD
HD8HB2	36.9	36.9	37.0	36.3	36.8	-0.10	2.1	0.3 L	37.0	-0.97	2.1	0.5	16	LD
J7NDEU	38.3	38.4 H	38.5	38.4	38.4	0.27	3.0	0.1 L	38.0	-0.46	2.9	0.5	16	LD
KMLJX9	39.1	39.7	35.9	40.0	38.7	0.33	1.8	1.9	38.3	-0.32	1.9	1.2	16	EM
LMLCFT	36.0	36.8	35.7	35.6	36.0	-0.28	1.7	0.5	39.7	0.31	1.8	2.5	16	TH
MYU9N9	39.5	40.4	40.1	40.2	40.1	0.66	2.5	0.4	41.4	1.13	2.3	1.5	8	XX
QR2FDX	43.5	43.2	42.7 L	43.2	43.2	1.38	2.1	0.3 L	41.9	1.37	2.0	1.6	16	LZ
QUQ4BJ	40.1	40.9	40.9	41.8	40.9	0.85	1.4	0.7	41.4	1.14	1.4	2.0	15	LC
WNYNLL	37.2	37.0	37.5 L	37.0	37.2	-0.01	1.3	0.2 L	38.5	-0.23	1.9	1.3	16	LD
YGRV99	46.2	44.3	34.6	34.0 H	39.8	0.59	2.9	6.4 H	39.2	0.07	2.6	4.3 H	8	LD

Consensus (All Labs) Results

Wk Mean	37.43	37.94	36.62	36.84	Month Mean	37.24	Grand Mean	39.01
Avg SDr	2.23	1.95	2.21	2.29	Avg SDr	2.17	Avg SDr	2.12
SD btwn Labs	4.76	4.52	4.43	4.65	SD btwn Labs	4.30	SD btwn Labs	2.12
Labs Incld	22	22	21	22	SD btwn Wks	1.87	SD btwn Wks	1.78
Labs Excld	0	0	0	0	Labs Incld	22	Labs Incld	19
Labs not Rcvd	0	0	1	0				

Key to Instrument Codes Reported by Participants

EM	Emerson 1200 Series	LC	L&W Crush Tester 48
LD	L&W Crush Tester 248	LZ	L&W Crush Tester (model not specified)
MB	Messmer Buchel K440	TC	TMI Monitor/Compression Tester, 17-37
TH	TMI Compression Tester, Model 17-76	WK	Zwick Z005 Crush Tester
XX	Instrument make/model not specified by lab		

	Weekly Means				Monthly Results				Cumulative Results					
WebCode	Week 1	Week 2	Week 3	Week 4	Mean	CPV	SDr	SD Wks	Mean	CPV	SDr	SD Wks	Wks	Inst
2CC8KG	12.5	13.1	12.7	12.9	12.8	-0.55	0.7	0.3	12.7	-0.65	0.7	0.3	16	LB
3GYG8K	14.0 L	14.0 L	14.7 L	14.1 L	14.2	1.78	0.1	0.3	14.1	1.90	0.1	0.5	16	BK
4NZT4H	13.0	12.9	12.6	12.7	12.8	-0.50	1.0	0.2	12.5	-1.04	0.8	0.3	16	XX
7E46CQ	13.6	13.2	13.4	13.2	13.4	0.42	0.9	0.2	13.7	1.03	0.9	0.4	8	TT
8D3R4P	13.0	13.4	13.1	13.5	13.2	0.20	0.8	0.2	13.2	0.24	0.8	0.3	16	LA
9F4EWJ	14.3	14.0	14.1	14.2	14.1	1.70	0.6	0.1	13.9	1.45	0.6	0.2	12	LZ
AAZZY2	12.5	12.5	12.6	12.8	12.6	-0.91	0.8	0.1	12.4	-1.22	0.7	0.2	16	LU
C2FB3K	13.7	13.3	11.6	13.0	12.9	-0.41	0.8	0.9 H	13.1	-0.06	0.8	0.6	16	LA
CAQ677	14.6 *	13.6	14.5	14.2	14.2	1.86	0.8	0.4	14.0	1.62	0.8	0.4	14	LW
CZYMRX	13.4	13.4	13.3	13.3	13.3	0.38	0.6	0.1	13.6	0.84	0.7	2.2 H	16	TT
D8GFG3	11.7 *L	11.7 *L	11.6 L	12.2 L	11.8	-2.20 *	0.0	0.3	12.2	-1.62	0.0	0.6	16	TS
GGRNV7	13.4	12.3	14.3	12.5	13.1	0.02	1.0	0.9 H	13.2	0.15	0.9	0.6	16	LA
H9V9LR	13.0	13.3	No Data	12.9	13.0	-0.12	1.0	0.2	13.4	0.55	0.9	0.7	12	LZ
HH2FZR	12.7	12.4	12.3	12.1	12.4	-1.24	0.7	0.2	12.4	-1.22	0.8	0.3	16	LW
KMLJX9	14.0	13.4	13.2	13.6	13.6	0.73	0.7	0.3	13.3	0.33	0.7	0.4	16	LZ
L3E7PY	12.8	12.8	13.1	13.1	12.9	-0.28	0.6	0.2	13.0	-0.21	0.7	0.2	16	LA
MYU9N9	13.1 L	13.2 L	13.6 L	14.0 L	13.5	0.66	0.0	0.4	13.6	0.87	0.0	0.5	8	XX
PKQURP	12.4	12.2	12.2	12.1	12.2	-1.45	0.7	0.1	12.4	-1.34	0.7	0.3	16	LB
QUQ4BJ	13.7	12.7	13.6	12.9	13.2	0.20	0.6	0.5	13.2	0.24	0.6	0.5	15	XX
UNAFNR	12.9	13.1	13.0	13.0	13.0	-0.18	0.8	0.1	12.8	-0.47	0.7	0.2	16	LB
WNYNLL	12.3	12.9	13.1	12.6	12.7	-0.64	0.9	0.3	12.8	-0.59	0.8	0.4	16	LA
XWCWMN	13.0	13.1	13.0	13.0	13.0	-0.17	0.7	0.1 L	12.8	-0.50	0.8	0.2	16	LB
YGRV99	14.1	13.3	13.8	14.0	13.8	1.13	0.7	0.3	13.6	0.81	0.7	0.5	8	LA
ZME6VC	12.6 L	12.6 L	13.7 L	12.6 L	12.8	-0.44	0.0	0.6	12.5	-1.09	0.0	0.5	10	LA

Consensus (All Labs) Results

Wk Mean	13.17	13.02	13.17	13.09	Month Mean	13.11	Grand Mean	13.10
Avg SDr	0.72	0.73	0.70	0.69	Avg SDr	0.71	Avg SDr	0.70
SD btwn Labs	0.72	0.55	0.83	0.64	SD btwn Labs	0.60	SD btwn Labs	0.55
Labs Incld	24	24	23	24	SD btwn Wks	0.38	SD btwn Wks	0.61
Labs Excld	0	0	0	0	Labs Incld	24	Labs Incld	24
Labs not Rcvd	0	0	1	0				

Key to Instrument Codes Reported by Participants

BK	Buchel Strip Compression Tester BK-155	LA	L&W Autoline
LB	L&W Model 152	LU	L&W 52 without moisture correction (was 53)
LW	L&W 53 with moisture correction (was 53M)	LZ	L&W (model not specified)
TS	TMI Monitor/STFI Compression Tester, 17-33	TT	TMI Short Span Compression, 17-34 (MB K455)
XX	Instrument make/model not specified by lab		